To Users

Providing informatization supporting services to the Chinese Academy of Sciences (CAS in short) is the main task of the Computer Network Information Center of CAS (hereinafter referred to as CNIC), and whether it can meet the demand of CAS institutes for informatization services is the benchmark of CNIC’s ability in informatization technology and services. After 15 years’ consecutive input, CAS has made considerable progress in informatization of scientific research and management, especially in informatization infrastructure, information literature, ARP and security guarantee. In 2013, with the support of all users and the efforts of CNIC staff, CNIC achieved steady development in every aspect of its business and made admirable achievements. CSTNET launched series services such as CSTNET Passport, Research Online Team Document Library, dChat instant messaging software and Organization Address Book, making periodical achievements in exploring informatization service integration. It started building a new-generation supercomputing system “YUAN” and set up the Supercomputing Innovation Alliance, improving the competitiveness of CNIC in supercomputing among peers. It also completed the optimization and upgrade of the ARP system and the network-based information-release platform, bettering the user experience. In terms of network-based science communication, focus was put on three Clouds, namely Science Education Cloud, Scientific Research Training Cloud and Mobile Information Cloud and breakthroughs were made in Scientific Research Training Cloud. E-Science research & development and application demonstration were fully promoted, realizing diversified scientific research applications. Projects funded by the National Natural Science Foundation hit the record in number and the project “Public Service Platform for Internet of Things Identification Management” was approved by the National Development and Reform Commission (NDRC). The National Engineering Lab of Internet Domain Name Management Technology was approved by NDRC and CNIC had its first national scientific research platform. When the first phase of Huairou Sub-center project was preliminarily completed, the informatization infrastructure of CNIC will be noticeably improved. CNIC and its subsidiary enterprises joint hands in setting up the Beijing Engineering Lab of Big Data Application Service and Technology and the Beijing Engineering Research Center of Internet Domain Name System, driving forward industrialization of CNIC. CNIC also hosted the 46th ICANN Meeting and the 9th IEEE e-Science International Symposium and took the leadership in completing the work in several international technology standards of multilingual e-mailboxes, which greatly enhanced its international influence. The monitoring data on implementation of the strategic planning of “one clearly-defined development strategy, three major breakthroughs and five top priorities” (“1-3-5” planning) indicates that 61.38% of the plan was fulfilled in 2013, completing more than half of the task with half of the time spent.

With the rapid development of informatization on scientific research in both China and the world, CNIC is fully aware that there is still a lot to do with informatization work of CAS and a lot to improve in CNIC’s work such as lack of technical skill training, shortage of typical applications and wide gap between disciplines. Therefore, CNIC will follow the strategic layout and requirements of CAS and reach out to CAS institutes to understand their demands and scientists’ needs for informatization support and service. CNIC will also keep improving its own ability by proactively reaching out to meet users’ demand, fostering interdisciplinary talents and uniting others for open research.

CNIC cannot develop without supports of all the users. We sincerely appreciate the great supports from all sectors of the society. The users’ comments and suggestions are the driving force for our sustainable development. In 2014 we will press ahead with our work by following the “1-3-5” planning and focusing on innovation so as to provide CAS with more informatization support and decision-making references for the implementation of its “First Action Plan” and provide our users with better information-related services. During this process, we hope to, as always, gain support and guidance from our users. Please send your feedback to us by the following means:

Tel: +8610-58812020
E-mail: support@cnic.cn

Computer Network Information Center,
Chinese Academy of Sciences
Organizational Chart

China Science & Technology Network Center
General Group for Advancing e-Science Applications
China Internet Network Information Center

Scientific Database Office
Scientific Data Center
Supercomputing Center
ARP Operation Support Center
Network-based Science Communication Center

Human Resources and Education Department
Financial Department
Comprehensive Office

Journal Editorial Department
Overall Operation and Maintenance Support Center

Capital Construction Department
Science and Technological Management Department

Academic Degree Evaluation Committee

Scientific Committee

Beijing Zhongke Beilong Science and Technology Co., Ltd

Secretariat of Chinese National Committee for CODATA
### Scientific Data Center

<table>
<thead>
<tr>
<th>Service name</th>
<th>Service contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloud Computing</td>
<td>Provide reliable and rental IT infrastructure service. Users can apply for resource on line such as host, storage, network, etc. and flexibly adjusted the resource scale to satisfy their needs. It helps users reduce the cost of hardware purchase and maintenance and users can concentrate to the business innovation.</td>
</tr>
<tr>
<td>Cloud Storage</td>
<td>Provide public service system of distributed large-scale storage infrastructure with the capacity of 6PB. The storage nodes locate in Beijing, Shanghai, Nanjing, etc.</td>
</tr>
<tr>
<td>Cloud Archive</td>
<td>Provide long-term storage and archiving for the non-repeatable data, such as spatial data, observation data and basic research data.</td>
</tr>
<tr>
<td>Cloud Backup and Recovery</td>
<td>Provide remote backup of key production and management system and scientific research system for research activities and national ministries.</td>
</tr>
<tr>
<td>VDB Cloud</td>
<td>Provide database foundation, data management and data publishing for researchers by integrating infrastructure and application software through cloud computing technology.</td>
</tr>
<tr>
<td>GS Cloud</td>
<td>Provide geospatial data search, reservation, download and on-line model analysis cloud service for users by processing data resource and model in the field of geo science, remote sensing, atmosphere and ocean, forming a series of characteristic data products.</td>
</tr>
<tr>
<td>Science and Technology Information Service</td>
<td>Provide science and technology information through subscription and push service of papers, patents, project information for researchers.</td>
</tr>
</tbody>
</table>

### Supercomputing Center

<table>
<thead>
<tr>
<th>Service name</th>
<th>Service contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-performance Computing Service</td>
<td>Advanced hardware resources, abundant software resources, such as commercial, open-source and self-developed, comprehensive system operation and maintenance management.</td>
</tr>
<tr>
<td>Parallel Computing Software Service</td>
<td>Provide plenty of self-developed software and tools in scientific computing, data processing, and visualization; also providing the service for consulting the parallel programming and the performance optimization.</td>
</tr>
<tr>
<td>Scientific Computing Visualization Service</td>
<td>Provide the visualization service for massive data, volume data, and molecular model, including the ways of remote visualization, consulting solution and software development.</td>
</tr>
<tr>
<td>Grid Computing Service</td>
<td>Provide the computing service for the national HPC grid infrastructure, the grid computing platform, and the user application, etc.</td>
</tr>
<tr>
<td>HPC Training Service</td>
<td>Provide the service for HPC training, including the MPI programming, OpenMP Parallel programming, also including the parallel computing platform with installing, using and operating the Linux OS, Intel software tools, etc.</td>
</tr>
</tbody>
</table>

### ARP Operation Support Center

<table>
<thead>
<tr>
<th>Service name</th>
<th>Service contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring Service</td>
<td>Provide 24-hour monitoring service (Illumination ED Alarming System) for the VPN network of the research institutes. Providing 24-hour monitoring service on running status of the ARP core servers in institutes.</td>
</tr>
<tr>
<td>Hosted Service</td>
<td>Provide hosted service for operation and maintenance of ARP system in the institutes, guaranteeing smooth operation of the system, and providing running status monitoring service and consultation service for common problems.</td>
</tr>
<tr>
<td>ARP Application Supporting Service</td>
<td>Provide technical support and consultation service on ten application systems and two platforms for 12B ARP institute users of CAS through technical support hotline and the ARP operating and maintenance platform.</td>
</tr>
<tr>
<td>Information Resource Service</td>
<td>Provide daily data monitoring report, data analysis and tendency analysis for the administrators of the institutes, relying on the two-stage data center covering both CAS and the institutes.</td>
</tr>
<tr>
<td>Application Supporting Service for Branch Websites of CAS-affiliated Units</td>
<td>Provide technical support and consultation service on website revision, special topic development, web page modification for the webmasters and reporters of the branch websites through technical support hotline and the technique communication platform.</td>
</tr>
<tr>
<td>Construction Service of Branch Websites</td>
<td>Provide website construction, characteristic function development, website revision, special section development, website hosting, website running and support service for the branch websites of the research institutes on the website group extension platform and the self-development platform.</td>
</tr>
<tr>
<td>Training Service</td>
<td>Provide business operation training service for the users of the ARP system and the website group.</td>
</tr>
</tbody>
</table>
### China Internet Network Information Center

<table>
<thead>
<tr>
<th>Service name</th>
<th>Service contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domain name registration management and domain name root server operation</td>
<td>Operate and manage Country Code Top-Level Domain name (ccTLD), CN and Chinese domain name system, and provide global users with uninterrupted domain name registration, domain name resolution, WHOIS query and other services.</td>
</tr>
<tr>
<td>Technical R&amp;D and security guarantee for national network infrastructure resource</td>
<td>Build up a world-leading Internet fundamental resource service platform which is highly efficient, secure and stable; support multi-level, multi-mode public-interest Internet fundamental resource service; actively seek breakthroughs in the core capability of China's network infrastructure resources and self-developed tools; and radically improve the reliability, security and stability of China's network infrastructure resource system.</td>
</tr>
<tr>
<td>Internet development research and consulting service</td>
<td>Actively track the latest development of Internet policy and technology, carry out business collaboration and cooperation with relevant international organizations and other countries and regions. Undertake major international Internet conferences and events, and build up an open platform related to Internet development to enterprises, users, research institutes.</td>
</tr>
<tr>
<td>Cooperation and technical exchange on the open Internet</td>
<td>Proactively track the latest development of Internet policy and technology, carry out business collaboration and cooperation with relevant international organizations and other countries and regions. Undertake major international Internet conferences and events, and build up an open platform related to Internet development to enterprises, users, research institutes.</td>
</tr>
</tbody>
</table>

### China Science & Technology Network Center

<table>
<thead>
<tr>
<th>Service name</th>
<th>Service contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet infrastructure services</td>
<td>Provide IPv4/IPv6 internet access, operation management and server hosting &amp; rental, etc. Based on international cyber resource of GLORIAD, HKOEPI, ORIENT plus, etc. supply high-speed sharing global data resources. Provide internet management services, such as resource management, performance management, fault positioning and traffic monitoring and analysis.</td>
</tr>
<tr>
<td>Network management service</td>
<td>Provide security services to the Internet information production, transmission, storage and processing, and provide security guarantee for the development of Informationization.</td>
</tr>
<tr>
<td>Informatization application service</td>
<td>Provide professional and secure e-mail system, video conference system and desktop conference services, and based on collaborative platform Duckling of Research Online series of application services including Research Online Team Document Library, Conference Service Platform, dChat, Research Homepage, CSTNET Passport, and Organization Address Book, etc.</td>
</tr>
<tr>
<td>Cutting-edge network technology research and innovative experiment environment service</td>
<td>Carry out future network interconnection, collaboration work environment technology study and others. Relying on CSTNET resources to provide experimental environment and service for science and technology innovation.</td>
</tr>
</tbody>
</table>

### General Group for Advancing e-Science Applications

<table>
<thead>
<tr>
<th>Service name</th>
<th>Service contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehensive informatization planning and consulting service</td>
<td>Provide comprehensive informatization planning and consulting services about technology, application, etc to organizations with informatization demand inside CAS.</td>
</tr>
<tr>
<td>Design and compilation of informatization construction proposal</td>
<td>According to their present and future needs, provide users with informatization construction proposal design and compilation services.</td>
</tr>
<tr>
<td>Software and hardware integration and development to meet the demands of field scientific research applications</td>
<td>Software and hardware integration and development for realizing data collection during field scientific research, e.g. video image collecting system, wireless sensor system, field inspection data collecting system, network building under field environment, etc.</td>
</tr>
</tbody>
</table>

### Network-based Science Communication Center

<table>
<thead>
<tr>
<th>Service name</th>
<th>Service contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile science popularization service</td>
<td>12302 phone number service, short and multimedia message service, Wap site construction DIY tool, iOS-based e-magazine creation and publication, Android application development.</td>
</tr>
<tr>
<td>Multimedia service</td>
<td>High-definition video production, mobile and multimedia studio, video editing and production, graphic design and production, cartoon, 3D animation design and production, digital exhibit design and production.</td>
</tr>
<tr>
<td>Science popularization Construction and environment service/tool</td>
<td>Science popularization activity organization and publication system, video transition and processing system, image processing tool, 3D panorama creation tool, building tool, science popularization column construction tool, access statistical analysis system, science popularization resource grid storage and service, cloud service environment for science popularization website operation.</td>
</tr>
<tr>
<td>Network-based science Communication</td>
<td>Portal service, science story design and production service, on-demand and live video broadcasting service, science tourism, expert article publication service, resource grid, online communities.</td>
</tr>
<tr>
<td>E-Learning service</td>
<td>Courseware recording and editing tool, tailored e-Learning software system, cloud-based online learning and training management, curricula, e-Learning solutions.</td>
</tr>
</tbody>
</table>

### Overall Operation and Maintenance Support Center

<table>
<thead>
<tr>
<th>Service name</th>
<th>Service contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fundamental environment operation and maintenance service</td>
<td>Provide operation, maintenance and service support for basic operation &amp; maintenance environment such as power supply, refrigeration and security of CNIC computer room; provide technical support for CNIC office environment, office phones, office air-conditioning and elevators.</td>
</tr>
<tr>
<td>Unified call center services</td>
<td>Provide customer service via the CNIC hotline +8610-58812020 to promote CNIC IT services and products; build a unified CAS operation &amp; maintenance team; understand users' need for scientific research information.</td>
</tr>
<tr>
<td>Informatization integration, operation &amp; maintenance and consultation service</td>
<td>Take charge of comprehensive integration of e-Science; organize and implement related projects; provide CAS institutes with informatization integration, operation &amp; maintenance and consultation service.</td>
</tr>
</tbody>
</table>
2013 is the year when the 12th Five-Year Plan was further carried out. CNIC earnestly implemented the spirit of the 18th CPC National Congress under the guidance of the leadership team and enhanced building of systems and mechanisms to drive business development. By formulating its own Eight-point Code to Cut Bureaucracy and Maintain Close Ties with the People, CNIC deepened the anti-corruption initiative and promoted frugality. By practicing the CPC mass line campaign in several phases, it solicited opinions and suggestions from the staff at grassroots and made adjustment accordingly, improving the services of CNIC. By monitoring the implementation of the “1-3-5” planning, it carried out every task of the planning.
I. Implementation of the “1-3-5” Planning

Up to October 2013, implementation of the “1-3-5” planning scored a total of 61.38 points (100 points for full completion in a 100-point scale). “Completion on time” was realized in the time schedule of the 12th Five-Year Plan period. The specifics are as follows.

Score of the Implementation of the “1-3-5” Planning

<table>
<thead>
<tr>
<th>Level-one indicator</th>
<th>Level-two indicator</th>
<th>Sub-item completion</th>
<th>Overall completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three major</td>
<td>One: All-round improvement of basic informatization services</td>
<td>66.88</td>
<td>66.17</td>
</tr>
<tr>
<td>breakthroughs</td>
<td>Two: Significant promotion of informatization applications</td>
<td>66.70</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Three: Creation of an innovative experimental environment for future IT R&amp;D</td>
<td>63.02</td>
<td></td>
</tr>
<tr>
<td>Five top priorities</td>
<td>One: Internet network system structure and key technologies in the future</td>
<td>45.14</td>
<td>52.70</td>
</tr>
<tr>
<td></td>
<td>Two: Reliable service system for fundamental resources of Internet network and security guarantee technology</td>
<td>55.79</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Three: High-performance scientific computing methods and software</td>
<td>52.35</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Four: Sea-cloud Data Center and its key technologies</td>
<td>57.43</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Five: e-Science and e-management application and key technologies</td>
<td>56.19</td>
<td></td>
</tr>
<tr>
<td>Three major</td>
<td>One: Implementing the task of construction</td>
<td>66.80</td>
<td>61.66</td>
</tr>
<tr>
<td>measures</td>
<td>Two: Organizing three types of business reforms</td>
<td>66.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Three: Promoting the innovation and development of five institute-level systems &amp; mechanisms</td>
<td>49.37</td>
<td></td>
</tr>
<tr>
<td>Total score in 2013</td>
<td></td>
<td></td>
<td>61.38</td>
</tr>
</tbody>
</table>

II. Business Development

In terms of the network infrastructure, in 2013, bandwidth of the connected network between China Science & Technology Network (CSTNET) and China Telecom was upgraded to 5.6G and that of the connected network with China Unicom upgraded to 5G. CSTNET and China Education and Research Network newly opened a 10G inter-connected line with the bandwidth reaching 32G. Scientific Data Center finished infrastructure construction for and was therefore capable of cloud storage, cloud computing, cloud archive and cloud backup. By the end of 2013, built capacity of storage environment reached 13PB. The distributed unified storage environment with 12 storage nodes, which were inter-connected via the 1GB/s high-speed network, realized centralized management and operation service. Supercomputing Center launched building of the new generation supercomputing system “YUAN”, and calculation size of phase one built in June 2014 will reach 300 trillion times.

In terms of network application service, CSTNET launched series Scientific Research Online services such as CSTNET Passport, Research Online Team Document Library, dChat instant messaging software and Organization Address Book, making periodical achievements in cloud service integration. CSTNET Passport, as a third-party basic identity authentication platform, was held by 250,000 people and daily average number of holders that logged in surpassed 25,000. The conference service platform covered over 90% of the CAS institutes. The e-mail system, Document Library, Organization Address Book and dChat realized interconnection and took initial effect, which greatly facilitated the users.

In terms of informatization of scientific research management, by the end of 2013, one hundred and thirty-three institutes had joined in the ARP system, and 739 independent websites had been set up on the website cluster platform of CAS (including 558 Chinese websites and 181 English websites.).
In terms of network-based science communication, a cloud environment system integrating science popularization cloud host, cloud desktop, cloud applications and cloud portal was created. The cloud portal (www.kepu.net.cn) had accumulative page views of more than 250 million during the same period and daily average page views of over 230,000. The daily average number of independently visiting IPs exceeded 50,000. Scientific research training cloud provided 10,234 users in 73 research institutes with 17,000 hours of online training and 76,000 hours of offline training. A mobile information cloud service platform was initially created and put into trial use.

In terms of the Internet fundamental resource management, more scientific, effective and automated technical means were applied to establish a dial-testing, scanning and processing mechanism for registration of websites with national top-level domain names. Websites that were not registered were not resolved for domain name, which further improved quality of national domain name registration service. Reserved domain names were partially opened to the public to better performance of the domain name service platform. By the end of December 31, 2013, the number of registered CN domain names was 10,829,000, and the number of Chinese domain names was 275,000. Meanwhile, the study on the Internet and forward-looking technologies was deepened consistently, and the influence of China in the global Internet community kept improving.

III. Scientific Research Projects and Achievements

In 2013, CNIC fully promoted the CAS IT project Technology Cloud and Management Cloud for the 12th Five-Year Plan period, and completed the NDRC task for CNGI construction, which was being prepared for acceptance. Fundamental service of Technology Cloud is running steadily, providing platform and technical support for construction of Field Cloud, and the Technology Cloud portal was initially built. Technology Cloud Alliance identification was formed, laying a sound foundation for interconnection of Technology Cloud and Field Cloud applications. Technology Cloud applications in a larger scope were accessed, and various sub-clouds such as computing cloud, data cloud, software service cloud and...
field cloud were under smooth construction. In terms of Management Cloud, Management Decision-Making Support Cloud to serve CAS scientific research management, Website Group Information Publication Cloud to centralize information publication across CAS, Science Popularization Cloud to provide the public with network-based science communication service and Academic Exchange Cloud to provide scientists with academic exchange platform were initially created. Centralized virtualization infrastructure was built; a centralized data resource center was set up; a centralized management information resource catalogue, information resource management specifications, an information resource pool and an information resource service environment were created.

Construction of NDRC CNGI project was basically completed, noticeably improving the informatization infrastructure of CAS for scientific research and its service support ability. Core network, backbone network and premise network fully supported IPv4/IPv6 and IPv6 bandwidth reached 10G; network construction for 109 research institutes, 30 field stations and 10 large-scale scientific facilities was finished. The IPv4/IPv6 network operation management system and security incident management system that covered the entire CAS were built and service was provided to the public. CNIC built up the Internet test bed for 12 nodes throughout China, providing the platform support for the next-generation Internet key technology research and promoting the progress of the next-generation Internet innovative technologies and the testing of IT service application for scientific research. It constructed the 23P distributed cloud storage environment and provided users with backup service above the national standard level. Five major application demonstration projects such as e-VLBI, ChinaFlux and Shanghai Synchrotron Radiation Facility were fully completed, all of which promoted and supported e-Science application.
To improve scientific research ability, CNIC proactively strove for and participated in CAS pilot/special projects. The project of “new generation of information technology research for the perception of China” it undertook fulfilled the assessment task of the year. It also provided such services as network access, data processing, platform support, and application development in pilot/special projects such as space science, carbon, low-rank coal and stem cells.

Based on its own orientation, CNIC took active measures and made full use of resources, and successfully acquired the projects of National Development and Reform Commission, Ministry of Science and Technology, National Natural Science Foundation of China and CAS as well as international and local government projects. In 2013, there were 93 new projects for CNIC, including 29 national projects and 2 international cooperation projects, with a total contract value of RMB133.2412 million. In the aspect of intellectual property rights, it applied for 69 patents in total (including 11 PCT applications) and acquired 17 patents. It applied for 42 software copyrights and successfully registered 37 of them.

IV. International Communication and Cooperation

In 2013, CNIC organized or hosted nine international conferences, including the 9th IEEE e-Science international conference and the 36th APNIC Conference, which not only expanded the international influence of CNIC in e-Science, e-Management and Internet, but also created a favorable external environment for CNIC development and triggered some breakthroughs in business cooperation. During the 46th ICANN meeting, the first time held in Beijing, ICANN announced to set up the world’s first ICANN Engagement Center in Beijing, for which China Internet Network Information Center (CNNIC) undertook the responsibility under the guidance of CAS. CNIC will become a new platform, where Chinese Internet community will make greater contribution to global Internet development.

In terms of international cooperation, CNIC continued to tighten its existing cooperative relations with the advanced scientific institutions in Europe and America, such as National Center for Supercomputing Applications (NCSA) in the US and Jülich Supercomputing Center (JSC) in Germany, and organized expert delegations to attend CHANGES2013 in the US. It also made efforts to consolidate the cooperative relations with developing countries. For example, it hosted the China-ASEAN Strategic Cooperation Meeting on Internet Fundamental Resources, and representatives of government, Internet management agencies and industrial organizations from 11 countries including Cambodia, Indonesia, Jordan and Laos attended the training. CNIC also cooperated with Microsoft Research in cloud resource cooperation, high-performance computing and big data, and two CNIC graduate students participated in the Microsoft Summer Camp 2013.

Moreover, CNIC hosted the 3rd China e-Science Forum, where CAS Deputy Secretary General Tan Tieniu, National Science & Technology Infrastructure Center Director Dai Guoqiang, Informatization Management Office Director Yang Feichao of Chinese Academy of Social Sciences and Vice President of Microsoft Research Connections Tony Hey were invited to give speeches. Besides the keynote speeches, the meeting also included the open expert discussion on “How to promote e-Science development in China”, issued the China’s e-Science Blue Book 2013 and exhibited the scientific research application systems. As the attendees were mobilized for heated discussions, the meeting promoted the opinion sharing and experience exchange on e-Science in China.
Scientific Research Network Environment
I. Infrastructure Construction
CSTNET (China Science and Technology Network) established the core network in Beijing, formed a nationwide backbone network which interconnects 12 regional sub-centers and over 20 independent institutes via high-speed circuit, covering more than 30 provinces, autonomous regions and municipalities.

In 2013, CSTNET and China Telecom expanded interconnection bandwidth to 5.6G, CSTNET and China Unicom expanded interconnection bandwidth to 5G, CSTNET and China Education and Research Network expanded interconnection bandwidth to 32G.

II. Operation & Maintenance Support and Services
1. Network running status
CSTNET uninterruptedly offered 7x24 network operation and maintenance service, timely response and handling fault and the more careful daily operation and maintenance in a whole year. +8610-58812000 hotline had 20533 calls the annual total, the length of total calls was more than 777 hours, and the number of trouble ticket handling was above 2265.

2. Network security status
Security monitoring service capability has been further enhanced, monitoring range expanded from inner to the whole network of CSTNET, monitoring capability extended to the terminal of users. In 2013, CSTNET discovered and handled 4,741 network security incidents, scanned and assessed 60,000 hosts, timely discovered 5,600 vulnerable hosts, provided risk analysis of remote penetration for over 2,000 web sites of the CAS research institutes.

3. E-mail system status
In 2013, E-mail system had 129 institutes, 28 laboratories and research groups, 13 companies, the total number of mailboxes over 190,000. It filtered spam mails over one million everyday, even over 1.8 million in the peak days, spam filtering rate of over 90%.

4. CAS video conference system status
In 2013, video conference system supported the large and middle scale above 138 meetings, which covered about 28,000 people. According to gross statistics, it supported institutes and research groups above 5 hundreds. Desktop conference system has been promoted to all institutes, which has above 200 fixed meetings and 60,000 users.

5. Conference Service Platform
Conference service platform provides a one-stop information platform and comprehensive conference website for managing and publishing scholarly conferences online. In 2003, 411 new conferences were created, including 203 officially published conferences, covering all the 13 branches and 110 academic institutes. Up to now, there are 520 conferences officially published.

6. Research Online Team Document Library
Research online team document library is a cloud storage and socialized collaboration platform for scientific research teams, developed on the basis of Duckling software, which enables user cloud storage, file sharing and collaborative working. By the end of December 2013, there were 27242 registered users, 2621 teams and more than 200 thousand resources in total.

7. Research Home page
Research homepage aims to provide personalized web scholar homepage service for academic scientists, as well as for the scientific research and academic institutions to provide academic achievements aggregation and member activities published services, which is one of research online services. As of December 31, 2013, more than 4000 scholars, including several academician and researcher, registered and created their personal web scholar home pages.

8. CSTNET Passport
CSTNET passport is a unified sign-in system, which can be used to get access to various scientific research and application services. On April 10, 2013, CSTNET passport was released and Duckling passport comprehensively upgraded to CSTNET passport.

9. dChat
dChat is an enterprise instant messaging platform, released in November 2013. It is a stable, flexible and open platform, which perfectly integrates the instant communication system and enterprise application software. dChat includes the server software, mobile phone client, PC client, web client and many other components and functions, such as WiFi automatically connected, the message passing, embedded in other web applications and so on.
10. Organization Address Book

Organization address book is an online address book management tool for organizations and groups, provided by CSTNET, released in November 2013. It allows users to easily manage the organization and the relationship between groups, in order to promote cooperation. Organization address book supports CSTNET passport to login and is a centralized data source for other applications.

11. Customer Services

CSTNET combined with the industry’s cutting-edge information, mobilize resources and technical strength, and timely collaborate with industry research institutions and equipment manufacturers to actively provide users with a wealth of practical training services. In 2013, CSTNET successfully hosted more than 30 on-site special lectures and trainings.

III. Domestic and International Communication

1. The 13th Chinese American Networking Symposium (CANS)

During September 9-11, 2013, CSTNET hosted CANS 2013 in Hangzhou, which became the biggest event in the CANS history and more than 100 people from China and US attended CANS 2013, including many network experts, scientists and CIOs. The topics of this symposium covered the future Internet, network security and etc.

2. The 25th Pacific Rim Application and Grid Middleware Assembly (PRAGMA25)

During October 16-18, 2013, CSTNET hosted PRAGMA 25 at Beijing. This meeting had discussions on Cyber-infrastructure, cloud computing, bio-medicine, geography, and e-Learning, which would prompt the research work in cloud computing and grid technology and therefore propelled the e-Science applications.

IV. Typical Cases

1. CSTNET’s Future Pacific Wave Access Point

Pacific Wave is a site where the vast majority of international R&E networks choose to land and interconnect with each other and with other networks in the US. Currently, CSTNET is planning to establish an access point at the Pacific Wave, which will enable the exchange and peering with other R&E network from the North America, European and Oceania.

2. ORIENTplus Update

In the beginning of 2013, to prompt more and more scientific collaborations and big science applications across China and Europe, the ORIENTplus link was updated from previous 2.5Gbps to current 10Gbps. Through the ORIENTplus, CSTNET has boosted data-intensive scientific activities in a range of disciplines such as high-energy physics, radio astronomy, genomics and etc.

V. Key Projects and Achievements

1. The next generation of information technology for sensing China

Sea-Cloud Innovation Environment (SCIE) is a national wide testbed supported by the “the next generation of information technology for sensing China” of the Chinese Academy of Sciences. In 2013, the architecture, protocols and standards of the SCIE have been established. The prototype subsystems of resource control and management, experimental service, and measurement, have been finished,
which have been integrated to one system and tested. At the same time, the experimental rack device which has the ability of network, computing and storage has been developed. Based on the experimental environment VPN which more than 10 core nodes were deployed in on a national scale, the R&D outcomes have been integrated dynamically, and the innovative researching environment, which has the abilities of test services, demonstration and evaluation, are gradually formed.

2. The research on testing, evaluation and technical specifications of the IPv6 transition mechanism and control system

The research on testing, evaluation and technical specifications of the IPv6 transition mechanism and control system was supported by the National Science and Technology Support Program of China. In 2013, the testing, evaluation and technical specifications of IPv6 transition mechanism and control system have been established, and the corresponding dynamical test system has been developed. Also, the prototype system of application-oriented flow monitoring technology and user behavior analysis in IPv6 transition have been developed, and the corresponding key algorithm has been designed. In addition, the test network environment of IPv6 transition and control system has been designed.

VI. Training Programs for Informatization

July 11, 2013 CSTNET User Technical Training was held in Beijing. November 29, 2013 Duckling User Exchanges Seminar was held in Harbin. And November 26-28, CSTNET hosted 2013 Network Technology Symposium.
Scientific Data Environment
Scientific Data Environment

I. Infrastructure Construction

In 2013, SDC comprehensively advanced infrastructure construction and completed the construction of cloud storage, cloud computing, cloud archive and cloud backup. By the end of 2013, the capacity of storage environment has reached to 13PB, and 12 distributed storage nodes realized the unified management and operation service through 1Gbit/s high speed network interconnection technology. Cloud computing environment was basically built with nearly 1000 virtual machines. Cloud archive environment can provide off-line service by 5PB Zhongguancun Center and 5PB Huairou Center. SDC completed equipment installation, debugging and testing for 5 backup centers with totally 1.1PB, including Beijing, Dongguan, Nanjing, Kunming and Changchun.

II. Operation & Maintenance Support and Services

1. Infrastructure Service

(1) Cloud Storage Service

Cloud storage with the capacity of 6PB was officially launched in June. Users can upload and download files through the client, and developers can build their own storage service through open API call.

(2) Cloud Computing Service

Cloud computing service provides reliable and rental IT infrastructure service. Users can apply for resource on line such as host, storage, network, etc. and flexibly adjusted the resource scale to satisfy their needs. Cloud computing service helps users reduce the cost of hardware purchase and maintenance and users can concentrate to the business innovation.
VDB Cloud integrates infrastructure and application software by cloud computing technology and provides researchers with convenient cloud database, data management and data dissemination services. After system test, it will be firstly promoted to more than 60 database units, and then gradually expanded to other database users.

2. Data Service

(1) Scientific Database Service

The CAS Scientific Database Portal System and the Network of Scientific Data Sharing, which led and operated by SDC, providing scientific database online sharing and literature associated service with National Science Library, CAS. Scientific Database Project launched the construction of 20 key databases and implemented the plan of subsidy after operation for professional databases in 2013. By the end of 2013, the scientific database access visitors added up to 62 million, and the data download was more than 660TB.

(2) Geospatial Data Cloud

Geospatial Data Cloud provides geospatial data search, reservation, download and online model analysis cloud service for users. More than 320TB geospatial data from 94 data products and 13 computing models converged in Geospatial Data Cloud and it has 58,180 registered users and 305TB downloads.

(3) Science and Technology Information Service

Science and technology information system provides the subscription and push service of papers, patent, project information for researchers through information collection, classification and mining. It is dynamically updated daily and has information navigation sorted by research field. It will be formally promoted to all users after test.

III. Domestic and International Communication

1. Cloud Resource Cooperation Program

In 2013, there were 10 research applications based on cloud computing from universities and research units funded
jointly by SDC and Microsoft Research, providing matched computing resource, funding, and related technical services. On August 26-28, Cloud4Science Summer School was co-organized, which aims to study and practice on how to make use of CAS Data Could and Microsoft Azure to support research application. There were more than 60 studies from 33 universities and research units attended the summer school.

2. Geospatial Data Cloud User Conference

2013 Geospatial Data Cloud User Conference was co-organized by SDC and ESRI on Oct 22, 2013. The theme of the conference is emerging trend of geospatial data service, and more than 260 users attended the conference from CAS, universities, research units and technology companies.

3. CODATA International Communication

The new executive director Dr. Simon Hodson visited CODATA-China and communicated with CODATA-China Vice President Prof. Huang Xiangyang and Secretary-General Prof. Li Jianhui on Dec 4, 2013.

IV. Typical Cases

1. Beijing Engineering Lab of Big Data Application Service Technology

CNIC took the lead in the application of Beijing Engineering Lab of Big Data Application Service Technology and got the official reply in 2013. This lab aims to deal with opportunities and challenges of big data application in big data era, to break through key technology of cloud computing, big data integration management and association discovery, big data analysis and visualization, to form the key software and system and to drive the development of big data application technology.

2. Rural Information Service Application

Based on the experience and technology in cloud storage and cloud computing, SDC supported Agricultural Information Institute of CAAS in the application research of rural information cloud service and cloud computing, and built the prototype system of national rural information service cloud storage and cloud computing center, implemented quick deployment of agricultural informatization application in cloud platform.
3. Foodborne Diseases Monitoring and Traceability Research

Took the advantage of data mining technology, SDC supported scientific research of health industry special project, focused on association analysis of foodborne disease, pathogenic factors and causes of food, and emergency command system of food safety accident and foodborne disease, and built the cloud service platform.

V. Key Projects and Achievements

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VI. Training Programs for Informatization

Data Cloud Environment and Service Technology Training (22-23 Aug, 2013)

Cloud Storage Application Development Technology Training (22 Nov, 2013)
Supercomputing Environment
I. Operation & Maintenance Support and Services

In 2013, the DeepComp 7000 has served for 445 users, which include 128 users outside CAS, and 317 inner users. The computing fields include computational physics, computational chemistry, materials science, life science, drug design, geophysics, fluid dynamics, climate modeling, astronomy, agriculture, and computer science fields, etc.

II. Domestic and International Communication

To keep on enhancing the communication and cooperation among the domestic and international academies, Supercomputing Center of Chinese Academy of Sciences (SCCAS) has held two international conferences in 2013. All of the experts who came from different countries and international academic organizations approved that scientists had made more progress in this way.

List of Domestic and International Communication

<table>
<thead>
<tr>
<th>Date</th>
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<td>2013.11.17-22</td>
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III. Typical Cases

1. Natural fund major project: Large-scale astronomical hybrid turbulence simulation implementation

SCCAS has provided data visualization services of large-scale astronomical hybrid turbulence simulation for Purple Mountain Observatory. By analyzing the characteristics of the data, it has worked out new methods overcome the large amount of data, details missing and many other difficult problems in the process of visualization. Meanwhile, SCCAS cooperates with the Purple Mountain Observatory on software development of high performance computing framework, and this has realized 10 thousand-core scale computing. In 2013, according to the demand for the Petascale/Exascale computing, SCCAS has studied the new generation programming model of XMAPP, and implemented the functions. So far, in computing level, SCCAS has realized the functions of fault tolerance, GPU, massively parallel processing and so on. The modular design of the software has also completed.

2. ADS transmutation systems Pilot Project Service: professional visualization custom software ADSVIS

SCCAS has provided On-demand visual analysis tool for ADS pilot project of the CAS Institute of Modern Physics. Transmutation system contains a huge number of the accelerator particles, There are a lot of variables need to show, while we need to reveal the changing of the characteristics of the particle motion information. For the above characteristics, the visualization tool contains optimize data preprocessing, large-scale data visualization rendering, path editing and animation export modules, which provides effective help for data analysis.
IV. Key Projects and Achievements

1. CFD Software on 10,000 Cores for Large Aircraft Design

SCCAS participated in the National High Technology Research and Development Program project “CFD Software on 10,000 Cores for Large Aircraft Design”, which is awarded the first prize of National Defense Science and technology progress award, Shanxi province in June 2013. Currently, SCCAS together with other institutes is the undertaker of 863 program project “whole flow filed simulation and optimal design for aircraft”, the project aim on developing whole flow field simulation and optimal design for key parts of aircraft. Four modules, CCFD-EC, CCFD-SEC, CCFD-LB and CCFD-MO, are developed and integrated into the CCFD software. CCFD-LB is tested on our DeepComp7000 supercomputer. Both the parallel efficiency and the precision of the results meet the engineering requirements.

2. Ultra-Mat: Heterogeneous Computational Material software

SCCAS has made remarkable achievements. We designed and implemented the 1st heterogeneous computational material PWP-DFT calculation software. For several hundred atoms system, the electronic structure calculation has a speedup of 20-30x. Our code is the fastest one compared with similar software. Series of research on application algorithm and heterogeneous algorithm have been made, and we started some research on the software/hardware co-design. Aiming for production level software, we are working on visualization and software development simultaneously. All these work have played a scientific model for parallel application software. Based on our work, we published 3 top conference and SCI papers, and we have supported several projects from NSFC and CAS.
3. New record achieved, a precise simulation of protein folding using 300 million CPU/Cores

A package targeting precise simulation of protein folding using parallel technology was developed jointly by research groups in Dalian Institute of Chemical Physics and SCCAS. It provides a solution of combining molecular dynamics and quantum chemistry to improve simulation accuracy and to balance computing cost and speed. This computing engine is called “AMNW”. It successfully carried out on the fastest supercomputing TH-2 manufactured by NUDT and reaches parallel efficiency of larger than 30%. It also was awarded the Best Application of “Prize for Supercomputing Application of Chinese Academy of Sciences”.
Propulsion and Propagation of e-Science Applications
I. Projects Promotion

1. CNGI Demonstrations

In the demonstration of remote experiment and data transmission of Shanghai Synchrotron Radiation Facility, we implemented the IPv6-based massive data synchronization. In the demonstration of Heihe, we implemented data collection and transmission of a large quantity of wireless sensor network devices mounted in Heihe Basin through IPv6. In the demonstration of ChinaFLUX, we upgraded devices of several field stations to support IPv6. In Qinghai Lake application, we installed 7 suits of automatic weather station supporting IPv6 around Qinghai Lake basin.

2. Pre-research of National S&T Database Resources Investigation

This project is entrusted by the National Science and Technology Infrastructure Center of the Ministry of Science and Technology (MOST). It aims at obtaining objective information of various sectors and various regions of our country, implementing normally S&T database resources investigation, and finally formulating the investigation form for national S&T database resources.

In 2013, we interviewed 11 institutes and research teams from 6 representative sectors, such as “large-scale scientific instruments”, “specimen resources”, “population & health”, “earth system”, “meteorological data” etc. After the interview, we studied and formulated an investigation system of national S&T database resource covering major sectors and regions of our country, and provided an operable plan for the investigation.
3. Information Project of Sanjiangyuan National Nature Reserve

In 2013, we overcame difficulties to go deep into Sanjiangyuan National Nature Reserve, mounted on the Qinghai-Tibet Plateau higher than 5,000 meters above sea level, worked in the field more than 30 days, and accomplished major tasks of the construction of field video monitoring systems. Meanwhile, we have finished the design of databases, development of video monitoring management software and GIS application.

We also designed the second phase plan of informatization construction for Sanjiangyuan National Nature Reserve. Both sides will cooperate deeply next step.

4. Key Database Projects on Scientific Data Resource Integration and Sharing

Collaborated with Institute of Zoology, Wuhan Institute of Virology, Institute of Hydrobiology, and the Bureau of Qinghai Lake National Nature Reserve e-Science, we successfully applied the project of Integration and Application of fundamental scientific data of Qinghai Lake Basin.

Meanwhile, we also take part in the project of data integration and application of nuclear subject and the project of data integration and application of Chinese information processing.

5. Other Projects

In 2013, collaborated with Beihang University, UCSD and UWM, we applied NSFC-NSF Sino-America software cooperation research project, Fundamental Issues in International Data Placement for Data-intensive Application, a Laboratory Approach.

Furthermore, we applied the project of Research on Layer Tree Mesh Model and Error Control of Reliable Application Layer Multicast from NSFC with Academy of Shandong Province.

II. Summarizing Technology Advantages & Carrying out Wide Cooperation

1. Key Information Technologies on ecology and biodiversity

Through the research and practice on e-Science for these years, we summarize several key information technologies
on ecology and biodiversity, which including e-Science middleware for research community, study and application of WSN devices supporting IPv6, data analysis and visualization, WebGIS, Sensor, application development on mobile intelligent devices, birds’ image identification, video analysis, study on IPv6-only network, etc.

Besides research, we also have carried out wide cooperation. Now we have cooperated with the Shanghai Science and Technology Museum, Dalai Lake National Nature Reserve in Inner Mongolia, Jing Dong Bureau of Ailaoshan Wuliangshan National Nature Reserve in Yunnan Province. A wide attention is paid to the field Monitoring System on Nomascus Nasutus in Dazhaizi, Wuliangshan National Nature Reserve. CCTV has presented a number of special reports.

2. Key Technologies on Material Genome Projects

The research group of Dr. Yang Xiaoyu, who is introduced by the program of “Hundred Talents Program of CAS”, has made progress in key technologies on Material Genome Projects.

The research group made progress in key technology and platform R&D on High Throughput Material Computing. They have brought out the concept of high-throughput material integrated computing and integrated with Supercomputing environment of CAS. They also implemented online submission and monitoring of job, integrated data with computation. MatCloud platform, developed by this group, is easy to use and practical. It disposes a great deal of tasks in the background, including online construction of single cell, produce and submission of jobs, automatic resolution of data, automatic archive of data, implementation of automatic procedure, etc.

Research results of this group have been concerned by researchers in this field. They have carried out and will carry out collaboration with a number of institutes, such as Shanghai Institute of Ceramics of CAS, Institute of Physics of CAS, Tsinghua University, Peking University, Beijing Computational Science Research Center, etc.

III. Academic Communication and Scientific Investigation

1. Academic Communication

In 2013, our department took part in the planning and preparation of 9th IEEE e-Science international conference. Dr. Yan Baoping served as one of the PC Chairs of this conference. Staff of our department undertook conference
organizing, paper reviewing, session chairs, etc. The paper of Wang Yuwei, a Ph.D. candidate of our department, is awarded as the best student paper of this conference.

In 2013, researchers of our department also attended the 36th APAN meeting, ICANN 2013, IEEE GLOBECOM 2013, etc. Su Jinhe, a Ph.D candidate of our department, attended “Latin American e-Science Workshop 2013” in Sao Paulo, Brazil. The topic of this workshop is “Turning Data into Insight”.

2. Scientific Investigation

For better carrying forward e-Science applications and promoting project cooperation, in 2013, staff of our department went to the Dalai Lake National Nature Reserve(Inner Mongolia), East Dongting Lake National Nature Reserve(Hunan), etc. to investigate and talk with front researchers about technology and technical solution.

In 2013, staff of our department also attended scientific investigations to Indonesia, which is organized by Center for International Scientific Exchanges, CAS.

IV. Journals Publishing

The Journal Editorial Department (http://escj.cnic.cn) is responsible for publishing ‘e-Science Technology and Application’ and ‘Newsletter of CAS Informatization’ aiming to spread latest e-Science progress to relevant authorities and research institutes.
1. e-Science Technology and Application

*e-Science Technology & Application* (ESTA), a bimonthly journal published by the CNIC with Science Press, is the only scholarly journal in China focusing on the topic of e-Science. ESTA takes its mission to present to the development trend of informatization technology and application achievements on various fields of natural sciences researches in China, and introduce the latest progress around the world. It has published 6 issues in 2013, the subjects including “Big Data”, “e-Social Sciences” etc. We collect manuscript from researchers and scientists. **Submission: PDF format file** of the full-length manuscript should be sent to journal@cnic.cn or submitted on website of ESTA (http://escj.cnic.cn). The manuscript templates of both Word and Latex formats can be downloaded from the website of ESTA (http://escj.cnic.cn/EN/volumn/current.shtml).

2. Newsletter of CAS Informatization

Newsletter of CAS Informatization is a bimonthly and restricted publication. It reports the development of informatization construction in CAS and the excellent cases, offers a platform for scientist and researchers to communicate and exchange their interesting, challenging and experience related to the informatization construction in CAS.
Informatization in Scientific Research Management
Informatization in Scientific Research Management

I. Infrastructure Construction

1. Cloud management infrastructure tending towards perfection

Following the deployment of the Iaas hardware equipment in 2012, ARP Operation Supporting Center (ARP Center) perfected the environment of the cloud platform in 2013 and formed Iaas hardware environment with a supporting capacity of 500 virtual machines. The construction has passed the special acceptance by related experts. Private cloud environment of the ARP Center has established more than 30 virtual machines as of 2013, giving strong support for the ARP application program construction of the 12th Five-Year Plan of the Academy. Among the systems, “ARP General Reporting and Approving Platform”, “Process Management Platform of Major Scientific Projects” have begun experimental running. The public cloud environment of the website group has possessed near 60 virtual machines, making comprehensive support for the deployment of the website group platform.

2. Integration application of unified certification system and ARP system

The construction of the unified certification system is one of the important items of the security technique construction of the 12th Five-Year Plan of the Academy. The integration application of the unified certification system and the managing system of all varieties of information of the CAS headquarters, and the integrated application of ARP system, was completed in 2013. The staff authentication and certification issuing was completed in the headquarters, realizing “one-time authentication, multi-system visit”. The unified certification system realized successful integration with office platforms of certain bureaus and the ARP systems of institutes like Kunming Institute of Botany. More popularization and application of the system will be carried out in the near future.
II. Typical Cases

1. Quick and effective response to research management reform of the CAS headquarters

In response to the requirement of the Central Committee of the CPC, CAS carried out research management reform in the headquarters in May, 2013. The reform had great impact on the application of the ARP system, requiring corresponding adjustment of the website group system. ARP Center mapped out a series of informatization application supporting solutions in the same month, answering to the call of the administration group of CAS. A special assurance team was then established. The ARP Center made corresponding adjustment in accordance to the transformation of organization setting, function orientation and post arrangement in the headquarters, rearrange all the management item processes, to make sure that the ARP system and the website group system function well under the new managing system, thus guarantees the smooth transition of the informatization application.

2. Advance the construction of science communication system with new media technology

Make full use of the new media technology to promote the construction of the science communication system after the reform of the headquarters. CAS initiated the official weibo and wechat, “Voice of CAS”, in May, 2013. The weibo account has currently 460,000 followers while the wechat account has more than 10,000. The network information distribution platform plays a positive role in the information integration and sharing of the CAS. The CAS mobile newspaper began to deliver mobile phone version newspaper through the MMS number platform of “12302”, with more than 12,000 each issue. The platform was self-developed and constructed, integrating the mobile newspaper, weibo and wechat editing platform, and made significant achievements in information communication and interaction.

III. Key projects and achievements

1. Incorporation of construction and utilization of informatization management and decision-making bears initial fruit

The new version of ARP system, V2.2, was released in 2013, with several business solutions designed for the transition of the management requirement. Mobile ARP APP, IISP, ARP Helper, general approving platform and UI transformation functions were added, 300 current function point of the running platform were optimized, making the system more stable and more effective.

Promote application experience of ARP system: we carried out overall planning and complete transformation for the ARP system UI to make it more convenient and efficient as well as more beautiful and clearer, based on the feedback of the users in the second phase. Meanwhile, in considering to the frequent transition of managing requirement and the heavy maintenance workload of the application system, we set up the general reporting and approving platform, taking example from the administrative examination and approval system of the government. Almost all the business realizes allocation, componentization, imaging, visualization, standardization and integration on the platform. The platform has been put into formal operation in all the CAS affiliated institutes and the headquarters after special appraisal.

2. Constructing platform, serving major scientific research

The Information Managing System on Major Research Projects helps researchers and administrative staff to realize life cycle management of major research projects, trace research process, fund execution enquiry and statistics, and full monitoring of task accomplishment situation. Therefore, the system fulfills the information communication, knowledge and document materials sharing & management, and is beneficial to complete research tasks through team cooperation. The system
also improves the efficiency of the organization and management of large and complicated projects. The system is now popular in the operation and management of Strategic Priority Research Programmes.

We also set up the Managing Platform for Major Scientific Infrastructure of the CAS, according to the requirement of user management. The platform covers the general profile, staff status, operation statistics, and projects, paper published and awards of users of 20 plus major scientific infrastructures, providing a strong tool to exhibit major scientific infrastructures of the CAS and make analysis on related statistics.

3. Network-based Information Release Platform (Version 2.0) launched

We build a network information distribution platform under the environment of cloud infrastructure services based on cloud management. We upgraded the website group content management system, access data analysis and the display system, and develop the version 2.0 of the platform.

The new platform integrates content management, access data analysis, website group supporting, knowledge and training resources, thus improves the user experiences of the webmasters.

We also set upgrade version of the access data analysis system on the platform. Based on the previous version, the new system can be used under cloud environment. We redesigned the supporting structure of the system, adopting distributed computing with multi-servers to analyze the access log of the website group, and therefore gain higher efficiency. Meanwhile, the functions of the system are strongly improved on data display, visualization, and hierarchy statistics by overall website group, branch website group & research institute website groups. We learn through test that the system can now monitor 700 websites, from the previous 290. Time needed for analyzing the statistics have been shortened to 3 hours from the previous 9 hours.

4. Realizing resource integration with resource navigation web portal

The CAS information resource navigation web portal takes initial shape. The web portal will integrate all kinds of web information run by the website group and the affiliated organization websites. Classified navigation and multi-dimension display will be introduced to provide vertical search service for the public.

The platform integrates the visualization technology of the Super Computing Center of the CAS, providing geographical distribution chart of the research results with plug-ins.
Network-based Science Communication
I. Infrastructure Construction

The center continued to construct and improve the cyber environment for supporting the endeavors on network-based science outreach across CAS. A cloud-based environment for science outreach and training has been built with a shared storage of 250TB and the capacity to support more than 200 virtual machines. The center also achieved the connection to the three networks (China Telecom, China Mobile and China Unicom) through 12302 and upgraded the short & multimedia message service system.

II. Operation & Maintenance Support and Services

1. Network-based Science Communication

(1) Portal Service

The center continued to construct and operate Virtual Science Museums of China, portal of CAS Network-based Science Communication Platform. 12 new stories were developed on frontier and popular science topics. 12 newly-invited research teams (or individual experts) opened their online columns. 98 collections of expert articles were published to explain the daily news from psychological perspectives. 152 original science videos were added to the online video channel. 52 special issued were delivered to recommend more than 200 articles from the institutes of CAS.

(2) Supporting Service for Institute

The center continued to provide science outreach supporting services including content planning, brand promotion, software development, website design, and operation and maintenance support. The center provided video and 3D animation production service for teams building the large research facilities and conducting research in priority areas such as e-VLBI, superconductivity, space weather monitoring and quantum hall effect. The center provided digital content production services for 99 research institutions and tested O2O mobile service patterns on the occasion of the academy’s Public Open Day. The center also provided science outreach column tools, blog publication support, multimedia design and production service, information integration service, visit statistics service, regular progress report service and website construction service for a number of research institutions and administrative agencies.
2. Network-based Education and Training

(1) Cloud-based Online Scientific Research Training Service (www.caskj.cn)

The center provided cloud-based training management service for research institutions, with the aim to become an important component of “Education Cloud”. The developed procedure of training management includes steps such as demand analysis, planning, implementation, evaluation, statistics and monitoring. Based on the demands of research institutions and training management, the online system supports the rapid deployment of individualized online learning platform and the effective implementation of specialized training seminars with whole processing management (during the three phases of pre-training, training and post-training).

(2) Courseware Development Support

The courseware recording and editing software supports users to conveniently record materials which are rapidly converted to three split-screen courses. The software also supports the automatic extraction of PowerPoint (lesson plan) index, the automatic recording of screen operation, and the synchronization of audio-video files and lesson plans.

3. Mobile Service and Application

(1) Short & Multimedia Message Service System

A comprehensive management and service platform was built to provide basic services such as the subscription of short and multimedia message, notification, interaction and mobile phone newspaper. Implemented applications based on the 12302 short & multimedia message service included the CAS mobile phone newspaper, science outreach mobile phone newspaper, Q&A user participation activity during the CAS Public Open Day, and postoperative nursing information for children with congenital heart disease in Gansu Province.

Multimedia (flash, scenario-based, 3D virtual environments, etc.) courseware production services include content planning, editing, art design and courseware development.

(3) Consulting Service

The center provided consulting services for research institutions on the development of network-based system for training and continued education.
(2) Mobile Service Platform and Portable CAS

A preliminary mobile service platform was established to integrate and manage different types of applications developed by research institutions, and to provide push notification service for Portable CAS. Portable CAS is a mobile terminal application which provides latest information and application services for researchers and administrative staff of CAS. A prototype of mobile magazine toolset has been developed to support the design and production of mobile magazines.

4. Multimedia Applications

The center provided 3D animation design services for Shanghai Astronomical Observatory, Institute of Physics, Institute of High Energy Physics and other research institutions, and produced short videos on frontier science topics such as e-VLBI, quantum hall effect and superconductivity.
III. Domestic and International Communication

The center continued to carry out collaboration and exchange activities with domestic and international organizations. Commissioned by Bureau of Science Communication of CAS and China Association for Science and Technology, the center participated in drafting the academy’s action plan on science education and the proposal on establishing a national cloud-based science outreach environment. The center co-organized the academy’s annual science outreach workshop (with training seminars). Funded by the East Asia and Pacific Summer Institutes in China for U.S. Graduate Students in Science and Engineering, a prior cross-cultural study was conducted with the Texas A&M University and Pennsylvania State University on the use of authentic data for inquiry-based science education. Beijing Science Animation Production Center and Science Education Base were co-founded with Beijing Weblong Digital Technology Corporation at Beijing Weblong Digital Industry Park, aiming to create win-win solutions based on regional advantages and complementary strengths on the workforce, technology and resource.

IV. Typical Cases

1. Network-based Science Communication

(1) Support Service for Prioritized Activities of CAS

The center provided technical support and participated in building network-based resources for prioritized science outreach activities deployed by Bureau of Science Communication of CAS (Public Open Day, CAS exhibition of science and technology achievements, lectures from Members of the CAS, official science outreach MingZhi website etc.).
(2) Mobile Science Outreach Exhibition

During the Public Open Day, Virtual Science Museums of China organized the joint mobile science outreach exhibition with the institutes of CAS to explore innovative ways (mobile website, WeChat platform, Near Field Communication, etc.) for promoting public understanding of science.

2. Network-based Education and Training

(1) Headquarter e-Learning Platform

The center developed an e-learning platform tailored for the headquarter of CAS, which is used to support multitier management, full-course training management, resource sharing, and self-definition of roles and user rights.

(2) Online Platform of the National Continued Education Base for Professional Researchers and Engineers

In 2011, Beijing Branch of the academy was selected as one of the national continued education bases for professional researchers and engineers. To support relevant activities, the center was designated as a partner to operate and maintain the online training platform in 2012. An online platform (http://bjfy.caskj.cn) was opened to support the national continued education base for professional researchers and engineers on May 30, 2013.

(3) Online Learning Platform for Institutes

The online learning platform was opened at the Institute of Microelectronics and Shanghai Institute of Technical Physics to support technology-enhanced continued education at institutes.
V. Key Projects and Achievements

1. Service Capacity Expansion of the Network-based Science Communication Platform (informatization project during the 12th Five-Year Plan)

The center has designed a preliminary framework of the cloud-based science outreach platform incorporating the cloud host machine, cloud desktop, cloud applications and cloud portal.

2. Mobile Information Cloud Service System and Typical Applications (informatization project during the 12th Five-Year Plan)

The project uses mobile information networks and cloud computing technology to build a comprehensive cloud-based mobile information service environment and public cloud service platform across terminals.

3. Resource Sharing and Exchange Platform for Primary and Secondary Schools

As a project under the academy’s collaboration with Guangdong Province, Resource Sharing and Exchange Platform for Primary and Secondary Schools aims to develop the standard of courseware package product and build social network for resource sharing among schools and teachers. A prototype (http://school.caskj.cn) was developed and received positive results at the mid-term evaluation meeting.

VI. Training Program for Informatization

The CAS Annual Science Outreach Workshop (with training seminars) was held in Beijing on November 25 and 26, which attracted more than 140 participants from institutes of CAS and affiliated organizations. The online learning platform (http://fipse.caskj.cn) was opened simultaneously, providing services for interested researchers and science outreach practitioners across CAS.
Internet Fundamental Resources Service
I. Stable Development of ccTLD

Until December 31st, 2013, the volume of CN domain name is 10829480, and the volume of Chinese domain name is 274553.

1. Adaptation of policy and regulations

(1) Solving of the problems related to record and resolution by scientific method

On October 29, 2013, CNNIC established a mechanism for ccTLD website record, dial test, scanning and processing through more scientific, efficient and automatic technological means, supervised and managed the problems related to record and resolution, cancelled the Hold status set after domain name registration, thereby further enhancing ccTLD registration service quality.

(2) Open registration of some reserved domain names

Since the policy of reserve domain name was put into effect in 2002, CNNIC has never interrupted its exploration into and research on the policy. In the past 10 years, after many researches and discussions amongst authoritative industry experts and listening fully to the opinions from the authorities at higher level, CNNIC decided officially at the end of October 2013 to open registration of some reserved domain names that were no longer suitable for protection. After opening of the reserved domain names, the registration earnings and donations will also be audited by an authoritative accounting firm, so as to ensure smooth operation of all the work in a safe and orderly way under the precondition of reasonably safeguarding the prior right of application of trademark holder.

2. Registration Administration

(1) CNNIC helped enhance the registration service level of registrars

In order to ensure registrars to get familiarity with the latest audit standard and related policies on ccTLD products in a timely manner, CNNIC organized 18 trainings and teach-ins for registrars and their agencies. The training attracted a total of 277 participants (person-time).

(2) CNNIC assisted SMEs and some regions in promoting informatization

CNNIC kept improving the construction of the ccTLD channel system, especially, it successfully developed ccTLD partners in Xinjiang and Tibet and assisted them in carrying out work tentatively and made contributions to improve local informatization level. So far, CNNIC has developed more than 80 core partners in 19 provinces in China.

In 2013, CNNIC, in cooperation with government organs including “Beijing Municipal Commission of Economy and Information Technology”, “Zhejiang Commission of Economy and Information Technology”, “Xinjiang Service Center for SMEs” and “Ningxia Commission of Economy and Information Technology”, etc., boosted the enterprise informatization projects for local SMEs and micro businesses and self-employed entrepreneurs. The projects built business information integrated service platform, helped local enterprises better utilize the Internet, gave assistance to promotion of local informatization level, made contributions to local economic and social construction and gave impetus to popularization of ccTLD applications.
3. Application Promotion

(1) Domain name application binding system

In 2013, in cooperation with the Record Center of Internet Society of China, CNNIC imported the binding relationship in the website record database, established the domain name application binding system, solved the record problems of ccTLD directed at e-business platform, and provided the public with inquiry services. Currently, the system is being used by 10 registrars, covering 11 network platforms, and the quantity of domain names used exceeded one million.

(2) Improvement of the application environment of “.中国” domain name

CNNIC strived to improve the application environment of the domain name of “.中国” and enhance users’ experience. Currently, “.中国” domain name is available for barrier-free input and access via browser, input method and mainstream mobile system, etc. “.中国” domain name has already been available for access via mainstream browser of PC terminal and mobile terminals (PAD, PHONE).

4. Service Enhancement

On the basis of domestic and international service standards and advanced service concept, combined with years of customer service experience and development planning, CNNIC completed with the all-around customer service system satisfying China Internet development requirements. It laid the foundation for improving the domain name industry user satisfaction and user experience level, promoting the healthy and orderly management of the Internet fundamental resources of China, and actively confronting the new challenges in the development of Internet.

II. Infrastructure Construction

In 2013, CNNIC’s domain name service platform was added with 4 resolution nodes in London, Stockholm, Amsterdam and Chicago. While increasing the scale of overseas resolution nodes, CNNIC worked out a plan on the basis of the domestic node distribution and resolution strategy, took in-depth optimization measures and provided Chinese Internet users with safer and more reliable basic resolution services.

In addition, CNNIC completed the construction work in the cloud resolution project (phase 2) concerning URL forwarding services, making all existing public authoritative cloud resolution nodes have the function of URL forwarding service and further expanding the service scope of authoritative cloud resolution.
III. Operation & Maintenance Support and Services

1. Successful implementation of DNSSEC signature for CN ccTLD

The DS record of CN ccTLD was submitted by CNNIC to the root zone on November 7, 2013 and officially took effect on November 13. Thus, CN became the 116th TLD that implements DNSSEC signature amongst the 339 TLDs in the world. After CN, DNSSEC of “中国／中國” top-level domain names took effect on November 26, 2013.

2. TLD operation and maintenance with new EBERO function

CNNIC, by relying on its advantages in research and development and rich experience in domain name operation and management, was chosen as one of the 3 global emergency back-end registry operators for new gTLD (EBERO) by Internet Corporation for Assigned Names and Numbers (ICANN) in April 2013 to provide new gTLD registries with emergency hosting services.

3. Further facilitate industry healthy and standard development

(1) Anti-abuse of Domain Name

Between January and December 2013, Anti-Phishing Alliance of China (APAC) Secretariat audited 66,296 phishing websites.

(2) IP Address Allocation and Management

As of December 2013, CNNIC had allocated over 74.19 million IPv4 addresses (equivalent to 4.42 A), over 4,327 blocks/32 IPv6 addresses and more than 600 AS codes.

4. Information security management

(1) Expanded the domain name security monitoring platform so as to ensure stable Internet infrastructure

Domain name security monitoring is one of key approaches to ensure safe operation of domain name services. In 2013, CNNIC had basically completed the distributed monitoring system and deployed 46 monitoring points (including 2 overseas monitoring points), which can monitor the security conditions of the entire domain name service system in an all-around way and offer corresponding alert services.

(2) Continuously improving CNNIC security level

CNNIC ISMS system successfully passed again the certification audit, and the scope of certification was extended to “domain name service” from the “CN domain name and Chinese domain name service”.

IV. Research on Internet Development

In 2013, CNNIC published 34 Internet reports (including 2 Internet macro-reports, 16 Internet reports (by sector) and 16 Internet reports (by region), compiled Milestones of Internet Development in China.

V. Technological R&D and Innovations

1. Technological achievements

<table>
<thead>
<tr>
<th>List of Patents and Standards</th>
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<tr>
<td>Before 2007</td>
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<tr>
<td>Applications for PCT patent</td>
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<tr>
<td>Domestic authorized patents</td>
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<tr>
<td>Application for domestic patent</td>
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<tr>
<td>Publication of IETF standards</td>
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<td>Publication of national standards</td>
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<td>Publication of industry standards</td>
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<th>List of Conference Papers, Periodicals and Registration of Software Copyrights</th>
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<tr>
<td>Conference papers</td>
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<tr>
<td>Periodicals</td>
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<tr>
<td>Registration of software copyrights</td>
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</table>

2. Carrying out prospective technological research and striving for the initiative in future development

In August 2013, the program of “National IOT Identity Management Public Service Platform” spearheaded by CNNIC was officially started.

In 2013, CNNIC, by relying on its own technologies and making use of machine learning algorithm, successfully built a set of cloud service platforms for face recognition, which has reached international standard in terms of “face detection in large-angle range”, “face recognition under complicated light rays” and “3D face modeling”, etc.

CNNIC officially announced its new gTLD service strategy in 2013. Through the cloud registry solution of CNNIC, China’s top-level domain name applicants, foreign Chinese top-level domain name applicants as well as gTLD and ccTLD registries that plan to enter China can enjoy all-round services by means of service hosting, technical hosting, system customization, security service as well as consultations about application and operation, etc.

In addition, CNNIC integrated its self-developed DNS software & hardware and cloud resolution services and explored into DNS consultation and training, etc., so as to form SDNS, a comprehensive DNS solution.

3. Establishment of Labs

(1) DNSLAB

So far, DNSLAB has funded 3 program phases and a total of 27 programs with a total amount of RMB4.58 million. It has contributed to cooperation with over 20 research institutes, colleges, universities and well-known companies.
(2) National Engineering Laboratory for Naming and Addressing
CNNIC applied for and was approved to build the National Engineering Laboratory for Naming and Addressing, by doing this, it will make breakthroughs in systematic researches on domain name management technologies and engineering construction, so as to ensure safe operation of China’s domain name system and support Internet management and control of relevant authorities.

(3) CNNIC-ISC Joint Lab on Internet Technologies
Since it was established, CNNIC-ISC Joint Lab on Internet Technologies has made achievement in the BIND10 project. Up to now, CNNIC and ISC have jointly developed many core functions of DNS authoritative services of BIND10, including memory management, database support, DNS authoritative solution function and DNSSEC functions of authoritative services. Thanks to the concerted effort of CNNIC and ISC, the Beta version of the BIND10 authoritative service software has been released.

In the aspect of technical research, the both sides established a platform for data exchange and analysis, aiming to solve safety-related problems in the Internet basic services. CNNIC and ISC jointly submitted 2 drafts to IETF and conducted researches and cooperated with each other in the fields of DNSSEC and IDN, etc.

In the aspect of service operation, CNNIC, in cooperation with ISC, established 2 ccTLD service nodes and monitoring nodes in the United States. At the beginning of 2013, CNNIC reached an agreement with ISC to build its third CN ccTLD node in North America at Chicago Equinix Switching Center.

VI. Domestic and International Communication
1. Involvement in International Internet Communities
(1) The office of an international organization was established in CNNIC
In April 8, 2013, Fadi, president and CEO of ICANN, announced at the ICANN 46 meeting that the first global engagement center of ICANN was officially established in Beijing. ICANN Engagement Center will be undertaken by CNNIC.

On July 1, 2013, CNNIC officially undertook the work of the next APTLD Secretariat.

(2) CNNIC undertook and took part in key international Internet conferences
CNNIC undertook the 46th meeting of ICANN: On April 7, 2013, the 46th meeting of ICANN was held in Beijing. ICANN 46 is a meeting undertaken by CNNIC, and it was the second time that Chinese mainland becomes the host
since CNNIC and ISC co-organized the ICANN 14 meeting in Shanghai in October, 2002, and was the second time that CNNIC undertook an ICANN meeting.

CNNIC undertook APTLD 63 Meeting and APNIC 36 Meeting: On August 22, 2013, the 63rd Asia-Pacific Top Level Domain Forum (APTLD) meeting undertaken by CNNIC was held in Xi’an. The 36th meeting of Asia-Pacific Network Information Center (APNIC) was also held in Xi’an between August 20 and 30, 2013. It was the second time that the meet was held in Chinese mainland, and was the second time that CNNIC undertook such meeting.

CNNIC participated in ICANN Meetings as well as other international meetings: In July and November 2013, CNNIC took part in ICANN 47 and ICANN 48 meetings, and communicated with participating domain name specialists, registrars and registries from all over the world, introduced and promoted ccTLD products and enhanced its influence on global Internet communities. In April and September 2013, CNNIC’s representatives attended the 47th session and the 48th session of APEC TEL, respectively. CNNIC continued to promote deployment of internationalized multilingual e-mail technologies in Asia-Pacific region. In October 2013, CNNIC’s representatives attended the 8th meeting of Internet Governance Forum (IGF) and undertook IGF theme forum for the first time. In 2013, CNNIC’s representatives attended the 86th, 87th and 88th meetings of IETF. 2 work group drafts promoted by CNNIC were officially released as RFC international standards and 1 individual draft spearheaded by CNNIC was officially adopted.

CNNIC established Internet Governance Research Center (IGR): In October 2013, the 8th meeting of Internet Governance Forum (IGF) was successfully held. At the forum, CNNIC’s representatives officially announced to the international Internet communities that Institute of Internet Governance Research was established, and arranged exhibitions outside the venue to actively promote the new center.
2. Business promotion and communication

On April 8th, 2013, ICANN officially signed letters of intent with CNNIC at the Internet System Development and ICANN Asia-Pacific Strategy Summit held in Beijing. By far, CNNIC has become the only emergency back-end registry operator in Asia, and it is responsible for protecting global new gTLDs. In July 2013, the application for “.公司” and “.网络” submitted by CNNIC passed the evaluation of ICANN. In November 2013, CNNIC officially signed “.公司” and “.网络” registry contracts. CNIC and CNNIC co-organized Asia-Pacific Internet Resources Capacity Cooperation Program 2013.

In June 2013, CNNIC submitted an application to ICANN for being a new gTLD Escrow Agent, and subsequently signed the NCC Data Escrow contract and the letter of intent for building the joint laboratory. CNNIC’s successful being a new gTLD Escrow Agent will not only fill the domestic gaps, but also improve the Internet security system of China.

3. International Visitor Receptions

On February 18, 2013, Fadi, President and CEO of ICANN, visited CNNIC with a senior team.

Along with the ICANN Meeting, “CNNIC Visiting Days” activity was held between April 6–11, 2013, attracting more than 80 visitors of nearly 30 registered companies and organizations from a dozen of countries including the USA, Canada and Germany, etc.

On May 30, 2013, CNNIC’s representatives met with the guests from South Korean Internet Security Agency (KISA) and the both sides signed a cooperation memorandum. In December the both parties co-organized CNNIC-KISA Strategic Partnership Conference.

On December 16, 2013, Don, Chairman of APTLD, visited CNNIC. The both sides exchanged views on the hot topics including ccTLD and NewG.
Overall Operation and Maintenance Support
I. Introduction

Overall Operation and Maintenance Support Center is a fundamental operation and maintenance support department set up by CNIC in September 2012 with the purpose to establish an overall operation and maintenance system and improve service ability. It is responsible for operation and maintenance of the basic environment in the computer room, centralized customer service support, informatization operation and maintenance, consultation and comprehensive integration, and provides effective support for internal informatization of CNIC.

Its responsibilities include coordination of computer room operation and maintenance, centralized support for customer service, technical management for the computer room and technical support for CNIC office phones, office air-conditioning and elevators.

Overall Operation and Maintenance Support Center consists of three departments, namely Operation and Maintenance Security Department, Call Center and Technical Department. Operation and Maintenance Security Department is responsible for operation maintenance and service support for the basic operation and maintenance environment of the central computer room such as power supply, refrigeration and security and improves quality and efficiency of computer room services by establishing an effective e-Science support and guarantee system. Call Center provides centralized customer service support for all the departments and technical support for internal informatization of CNIC. Technical Department is in charge of comprehensive integration of e-Science and e-management, organizes construction of related projects and provides informatization operation and maintenance as well as consultation for research institutes.

II. Main Achievements

1. Fundamental operation and maintenance support

The center guarantees safe operation of computer rooms without any major accident and proactively promotes standardized, energy-intensive and efficient operation and maintenance management. It practices quantitative management by organizing electricity metering renovation, installing smart meters and measuring PUE of computer rooms. By launching strategic cooperation with ENLOGIC, a leading energy management company, it explores the new-type energy management mode and improves environment management in computer rooms. The center also actively explores higher energy efficiency, which already took initial effect and paved the way for future work.

2. ITIL operation and maintenance management platform

The center issues the Provisions on Operation and Maintenance Service Management in Computer Rooms and promotes online processing of services to improve work efficiency. By automatically collecting operation and maintenance data and collecting the data via mobile
inspection, it practices quantitative management and promotes paper-free inspection. Establishment of a three-dimensional visualization system platform helps exhibit status of computer rooms directly and provides operation and maintenance staff with important information support.

3. Call Center

The Call Center, which began operation in July 2013, helped construct a centralized CNIC customer service platform, realize closed-loop management for customer service, set up a centralized CNIC customer service team and open a window to CNIC for the public. It is also engaged in publicity and e-Science demand surveys, bringing a direct benefit of more than RMB300,000 for all departments.

4. Comprehensive service platform

The comprehensive service platform phase one was further improved, deployed and put into trial use. The phase one of the overall operation and maintenance support portal was built up and put into trial run. Efforts were made to explore the key technologies in resource aggregation under market mechanism, and development of the prototype system for resource aggregation and survey of major demonstration applications were completed.

5. CNIC informatization support

It is responsible for improving the informatization environment and popularizing informatization applications and helps elevate CNIC ability in informatization application. It organizes ARP-related training within CNIC, popularizes internal document signing applications, promotes paper-free office and improves office efficiency. Meanwhile, the office network platform is upgraded to ensure safe and reliable Internet use in office.
I. Academic Committee and Its Activities

The academic committee is the academic consultation and appraisal organization of CNIC, and is responsible for providing consultation and suggestion on strategic planning for CNIC development, major scientific research deployment and discipline development. It is also responsible for providing appraisal and suggestion on scientific layout of CNIC, establishment and cancellation of research units, scientific research projects and scientific work and academic ability of backbone staff.

In 2013 CNIC drew up the Regulations on Work Implementation for academic committee of Computer Network Information Center, Chinese Academy of Sciences, and organized and completed the re-election of the Committee. The 5th academic committee has 1 director, 1 deputy director and 5 members. In order to meet the demand of CNIC for sustainability and international cooperation, the committee has set up an External Expert Committee, a Foreign Expert Committee and a Youth Expert Committee, all of which report to the academic committee.

The academic committee completed the project acceptance for CNIC institute-level youth fund applications in 2012, the project evaluation for youth fund applications in 2013, the appraisal for CNIC post management regulations and the acceptance evaluation for CNIC special fund, director fund and innovation fund applications for 2010-2012. It also finished appraisal for the recommendation materials for National Award for Science and Technology Progress, the preparation proposal on CNIC e-Science Technology and Application Open Lab, CNIC institute-level special project guides in line with the top five priorities in the “1-3-5” planning and project evaluation.

II. Academic Degree Evaluation Committee and Its Activities

The Academic Degree Evaluation Committee of CNIC is responsible for studying and handling the academic degrees and postgraduate education of CNIC under the guidance and entrustment of the academic degree committee of University of CAS and academic degree subcommittees of relevant disciplines, and under the leadership of the director office of CNIC.

In 2013 the Academic Degree Evaluation Committee of CNIC completed the following tasks: postgraduate recruiting (72 master degree candidates and 12 doctoral candidates), tutor qualification appraisal (2 doctoral supervisors and 5 supervisors of graduate students), preliminary evaluation of postgraduate degree (44 master degree candidates and 6 doctoral candidates), appraisal and recommendation on application for various scholarships for in-school postgraduates, selection of outstanding students and special reports on technological innovation and social practices.
III. Forward-looking Layout

CNIC carried out project setup for the leading-edge projects for the youth talent in 2013 in order to continue its support to youth talent in carrying out application researches to meet the informatization demand of CAS scientific research, to facilitate the rapid growth of youth talent and to foster young technical backbones and reserve forces. Upon the evaluation of the academic committee of CNIC, 9 projects were selected, with a total fund of RMB860,000.

<table>
<thead>
<tr>
<th>No.</th>
<th>Project name</th>
<th>Person in charge</th>
<th>Project code</th>
<th>Support fund (RMB10,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Functional expansion and application popularization of ARP document processing system based on mobile intelligent terminal</td>
<td>Liu Yanliang</td>
<td>CNIC_QN_1301</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>NFC-based information exchange study and application demonstration of science popularization</td>
<td>Bi Hongyu</td>
<td>CNIC_QN_1301</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Study on congestion algorithm for Content-centric network</td>
<td>Ren Yongmao</td>
<td>CNIC_QN_1301</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Study on and realization of virtual assembly system in computer rooms</td>
<td>Chen Xin</td>
<td>CNIC_QN_1301</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>Survey analysis on the development trend of supercomputer centers in China</td>
<td>Gu Beibei</td>
<td>CNIC_QN_1301</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>Study on access control for scientific computing cloud service platform</td>
<td>Wang Xiaoning</td>
<td>CNIC_QN_1301</td>
<td>10</td>
</tr>
<tr>
<td>7</td>
<td>Technical study on SM algorithm-based DNSSEC key rotation system</td>
<td>Zhang Haikuo</td>
<td>CNIC_QN_1301</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>Computer room operation &amp; maintenance management information system for resource service</td>
<td>Li Jingjing</td>
<td>CNIC_QN_1301</td>
<td>10</td>
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<tr>
<td>9</td>
<td>Technical study on data acquisition and analysis of DNS and Internet behaviors</td>
<td>Xiao Zhongnan</td>
<td>CNIC_QN_1301</td>
<td>9</td>
</tr>
</tbody>
</table>

In 2013 based on its needs of the informatization support of research development, CNIC utilized its own fund, selected the key technologies and typical applications for informatization support and set up 6 director-fund projects and 1 institute-level special project. The amount of the fund reached RMB2.7 million.

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<tr>
<th>No.</th>
<th>Project name</th>
<th>Person in charge</th>
<th>Project code</th>
<th>Support fund (RMB10,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sharing platform of multi-source heterogeneous scientific research data</td>
<td>Li Chong</td>
<td>CNIC_ZR—201301</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>Study on key identification technology for heterogeneous marks of the Internet of Things</td>
<td>Shen Shuo</td>
<td>CNIC_ZR—201302</td>
<td>30</td>
</tr>
<tr>
<td>3</td>
<td>Study on key technologies for CNIC scientific resource sharing platform</td>
<td>Zhang Honghai</td>
<td>CNIC_ZR—201303</td>
<td>30</td>
</tr>
<tr>
<td>4</td>
<td>LOD-based information publication and associated discovery system for ancient books</td>
<td>Shen Zhihong</td>
<td>CNIC_ZR—201304</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>Development and application demonstration of internal management risk prevention &amp; control platform for research institutes</td>
<td>He Xiaotao</td>
<td>CNIC_ZR—201305</td>
<td>30</td>
</tr>
<tr>
<td>6</td>
<td>Testing service platform for scientific research management</td>
<td>Liu Xuemin</td>
<td>CNIC_ZR—201306</td>
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List of Institute-level Special Projects Set Up in 2013

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<th>No.</th>
<th>Project name</th>
<th>Person in charge</th>
<th>Project code</th>
<th>Support fund (RMB10,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Building of ITIL operation and maintenance service platform</td>
<td>Li Jianhui</td>
<td>CNIC_ZR—201306</td>
<td>120</td>
</tr>
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</table>

IV. Integrated Management

1. Scientific research management

In 2013, the informatization-specific projects of CAS for the 12th Five-Year Plan period, namely “Promotion project for application of research informatization”, “Integration and sharing project for technology data resources”, “Informatization management and decision support project”, “Transmission service project for network-based Science” and “Network security guarantee and service project – separation net of CAS and security guarantee and services of CSTNET” were fully unfolded. All of the projects were in smooth progress as scheduled.

Meanwhile, CNIC put more efforts in the industrialization projects, the special repair-purchase project of the Ministry of Finance, the science support project of the Ministry of Science and Technology, the informatization operation and maintenance special project of CAS and other important projects, completed the construction of major projects according to the annual work plan, and provided an advanced and reliable informatization environment for the scientific research informatization and management informatization of entire CAS.

In order to further optimize the work process of CNIC, strengthen the internal management and make consistent improvement of the product quality and service quality, on the basis of establishment of the quality management system and the information security management system in 2012, CNIC kept improving the two systems by organizing internal auditor training, internal auditing and management review. With the participation of CNIC leadership at various levels and the staff, CNIC passed the external annual auditing for the quality management system (ISO9000) and the information security management system (ISO27001).

2. Personnel education

By the end of December 31, 2013, CNIC had 739 regular full-time employees and 167 in-school postgraduates (including 32 doctoral candidates).

In 2013, the Human Resources & Education Department formulated the *Interim Measures for Introduction and Management of Domestic and Overseas Outstanding Talents for CNIC*, and established a national/CAS/CNIC three-dimensional talent introduction and fostering structure. It also promoted talent introduction by facilitating the “Ten Thousand Youth Talents Program” and “Hundred Talents Program of CAS”. The department also drew up the *Interim Measures on Management of Government-sponsored Overseas Study for CNIC*, setting up a national/CAS/CNIC/research department four-dimensional framework for fostering backbone talents. By putting into effect the *Guiding Opinions on Management by Objective and Annual Assessment of Staff at Important Posts in CNIC(Trial)*, it kept promoting the key staff study plan and the academic paid leave to drive their growth and academic exchange. By formulating the *Implementation Provisions*...
on Post Management of CNIC (Trial), it preliminarily realized staff management, recruitment and assessment by category. Selection of members of the Youth Innovation Promotion Association and exchange activities were actively organized. With efforts made to strengthen the platform building for continuing education and training, CNIC built up a management team for continuing education at the level of institutes and offices. Two training projects won the financial support of CAS.

Postgraduate education was further expanded in scope and a periodical breakthrough was made in building of supervisor teams and joint fostering of postgraduates. As for supervisor selection, CNIC was the first in CAS to launch selection of major-oriented supervisors of master candidates. The plan on dedicated classes for fostering interdisciplinary postgraduates was discussed. CNIC actively implemented the education strategy of integration of science and education and reached the intent on jointly fostering doctorate postgraduates with Beihang University. In 2013, the Software and Network Undergraduate Summer Camp was successfully held, manifesting the CAS education principle of “serving the country with collaboration and innovation”.

The graduate faculty organized and guided the in-school postgraduates to successfully apply for the scholarships of CAS in 2013. Wang Guodong, a doctoral student, won the President Excellence Award of Chinese Academy of Sciences in 2013. Wang Jinyi, a doctoral student, won the 2013 Chu Yuet Wah Excellent Doctoral Student Award of CAS. Postgraduate Wang Yuwei and other postgraduates won the national scholarships in 2013. Twenty-four postgraduates won the honorary titles of “Merit Student”, “Outstanding Student Cadre” and “Excellent Graduate” of the University of CAS.

3. Financial management

In 2013, Financial Department adhered to the task of “1-3-5” planning to promote reasonable allocation of financial resources and did well in fund planning, financially guaranteeing the completion of Huairou project phase one and construction progress of Information Building. Wealth management income with CNIC fund was further enhanced, increasing the benefit of fund use. In response to the requirement of the Ministry of Finance on tidying up fund balance of scientific research projects, Financial Department, together with Science and Technology Management Department, tidied up 227 projects and closed 200. It also finished revision of the Interim Measures on Management of Fund Balance of Scientific Research Projects in CNIC. Supervision and inspection on use of the “three public consumptions” were stepped up. Financial Department persisted in reporting expenditure to each department on a monthly basis, effectively keeping the “three public consumptions” under the budget target. Great attention was paid to budget enforcement of CAS for 2013, and Financial Department tracked project implementation in a timely manner.
4. Administrative management

The Comprehensive Office earnestly fulfilled work arrangement of CAS, formulated, issued and implemented the Work Plan on Supervision and Inspection (Trial) for CNIC, took responsibility for two investigations to CNIC made by CAS Vice President Zhang Yaping, and organized the development strategy seminar of CNIC in 2013. It also organized and held the work summary and commendation conference of CNIC in 2012 and the sixth meeting of the second session of workers’ congress. In order to promote information popularization, the office invited CAS leaders in charge of information popularization to give training on management of governance information and website content. Efforts were made in document management and there was no accident of leakage throughout the year. Security and property management were strengthened; fire drill was held once; mass incidents of petition were properly handled; there was no accident out of negligence in the year.

5. Industrialized operation

In 2013, preliminary results were achieved in terms of industrialization. Total assets invested and held by Zhongke Beilong Science and Technology Co., Ltd grew by 6.3 times compared with that of 2009, and the owner’s equity (comprehensive) grew by 2.6 times compared with that of 2009. All of the holding and investing companies currently in operation have fulfilled the annual business targets.

In 2013, Beilong ZeData (Beijing) Technology Co., Ltd completed the investment increase. By now, equity structure adjustment of companies invested by CNIC was entirely concluded. In the CNIC equity management architecture, Beijing Zhongke Beilong Science and Technology Co., Ltd, in charge of asset management, directed the overall operation and investment. In March 2013 Beijing Beilong Yunhai Network Data Science and Technology Co., Ltd was incorporated, and in December, 2013, the Huairou sub-center was officially taken over. The company focuses on providing quality services for CNIC and sister institutes, but also engages in operational IDC business outside CNIC to increase operation efficiency of the informatization infrastructure and improve the service quality and ability.

In March 2013, KNET Co., Ltd(Beijing) invested in and incorporated Beijing Engineering Center Co., Ltd for Internet Domain Name System, one of the first batch engineering research centers in Beijing ever recognized by Beijing Municipal Commission of Development and Reform. In March, Beilong ZeData invested in and incorporated Beilong ZeData Nanjing Data Science and Technology Co., Ltd in Nanjing.

CNIC actively promoted work with Internet Service Innovation Park of Zhongguancun Science City. It organized companies concerned to apply for national and Beijing municipal projects of various types over ten times, and five projects were already approved, winning RMB7.8 million fund.
6. Capital construction

Capital construction of CNIC was in smooth progress. The Huairou sub-center project phase one completed construction and was delivered for use at the end of 2013. For the phase two, the land allocation agreement was concluded and the regulatory plan on land use for construction was being drafted. The construction project Information Building of CAS, located in Baofusi, Zhongguancun, completed proposal adjustment and application for the building permit. 82% of the relocation work for the Information Building has been fulfilled.

V. Party Building and Party Affairs

In 2013 CNIC took the opportunity of the mass line campaign to promote building of organizations, work style and systems of the party, and organized study meetings and ten seminars, collecting 441 opinions and suggestions from the masses. The party leadership took the lead to draft introspection materials on criticism and self-criticism. All of the required activities of the campaign were primarily concluded through work rectification and system establishment, fully tapping into the role of the party as the political core and supervisor and ensuring the fulfillment of the CNIC work.

A group of role models emerged in CNIC in the activity that encouraged CNIC staff to be excellent. Cheng Haitao and nine other people were awarded the title of 2013 Outstanding Party Members in CNIC; Deng Song and Shi Tao Tao won the title of Excellent CNIC Staff Member in Party Affairs; CNNIC party branch No.1 won the title of Advanced Grassroots Party Organization; Su Huimin and nine other people were awarded the title of Outstanding Staff Members; CSTNET Network Center won the title of Advanced Group. Meanwhile, under the leadership of the party committee, CNIC Working Committee on Women successfully applied for and was awarded the title of “Women with Great Contribution” Advanced Group by CAS Working Committee on Women in 2013.

CNIC Discipline Inspection Commission supervised the process of bid invitation and tendering and audited the scientific research business for its authenticity and legality. It also completed the performance auditing for the director fund, innovation fund, youth fund and institute-level special fund. Follow-up auditing was conducted for the capital construction project of Huairou sub-center.
VI. Construction of Labor Union and Organization of the Youth League

1. Work of the labor union

In 2013 the CNIC labor union finished re-election of its committee. In terms of enriching the employees’ life, the 2nd May Day’s Labor Knowledge and Skills Competition was held by following the principle of “serving the ‘1-3-5’ planning and making contribution to the 12th Five-Year Plan” with a view to widen the horizon of the employees and improve the informatization service level. According to the gist of the Program Outline on National Fitness, National Fitness Week activities were carried out again, with two more types of sports being included. Meanwhile, walking and poker contests were newly added and recognized by the employees. In terms of guaranteeing the rights and interests of employees, attention was paid to details, and fund of the labor union was made full use so that it could benefit the work of every employee and promote the construction of a harmonious labor relation.
2. Construction of the Youth League

In 2013, the Youth League Committee of CNIC launched the serial activities of the funded students in Shuimowan Hope Primary School making trips in Beijing, and gave out subsidies and stationery to the funded students at the donation ceremony. In terms of serving growth of the youth, the league held rich activities such as the first poetry recitation contest, photograph contest, “three services” in communities, social gathering for single young people and voluntary tree planting. In terms of building of the grassroots Youth League branches, the nine existing grassroots league branches and league teams were perfected, and work division of the league members and designated contact were promoted. Each league committee member is responsible for contacting 1-2 league branches or teams and guiding their work, so as to set a stage for the grassroots league branches.

VII. Retired Veteran Officials

In 2013, CNIC actively organized the retired party officials to study the spirit of the 18th CPC National Congress and to participate in the knowledge contest, so as to help them to fully understand the report of the congress. Meanwhile, the retired veteran officials were often visited and greeted, and colorful cultural activities were held for them.
Appendix 1: Milestones of CNIC in 2013

1. On January 1, the Chinese Academy of Sciences website (mobile), developed by ARP Operation Support Center, was launched for trial operation.

2. On January 15, CNNIC issued the 31st Statistical Report on Internet Development in China. The report showed that the number of netizens in China had topped 564 million by the end of December 2012 and Internet penetration rate was 42.1%.

3. In February, CNIC was jointly named by the Ministry of Education, Ministry of Science and Technology, Chinese Academy of Sciences and China Association for Science and Technology as one of the first social practice bases for science popularization and education in middle and primary schools in China.

4. On March 1, the 35th Asia-Pacific Network Information Center (APNIC) meeting was held in Singapore. CNNIC IP address expert Zhao Wei was reappointed consecutively as APNIC Executive Council member for a term of two years.

5. In March, the international Internet technology standard organization IETF issued the international technical standards on POP extension and IMAP extension supporting internationalized multi-language emails. The two technical standards were compiled by CNNIC technical expert Yao Jiankang and Shen Shuo respectively as first author together with foreign experts.

6. On April 2, ICANN announced to select CNNIC as the Emergency Back-End Registry Operator (EBERO) of New Generic Top-level Domain (New gTLD).

7. On April 8, the 46th ICANN meeting kicked off at Conference Center of Beijing International Hotel, and 2,500 people from all over the world attended the meeting. The meeting was jointly hosted by CNNIC, China Organizational Name Administration Center (CONAC) and Internet Society of China (ISC).

8. On April 8, the world’s first ICANN Engagement Center was set up in Beijing. The center was undertaken by CNNIC with the guidance of Chinese Academy of Sciences.

9. On April 10, Duckling Passport was upgraded to CSTNET Passport and officially launched. It fully supported the CSTNET application services and realized centralized logon.

10. On April 12, the 10,000M network connection of the Chinese-Europe high-speed scientific research network project ORIENTplus was officially launched.

11. On May 16, the startup meeting of the “application demonstration of big data service platform” project of National Development and Reform Commission was held at CNIC.

12. On May 18, Science Museums of China WeChat was put into use.

13. On June 14, Data Cloud storage service of CNIC was officially launched (http://service.dcloud.cn).

14. On June 19, the IPv4 10G lines directly connecting CSTNET and China Education and Research Network (CERNET) started service.
15. In June, the major database project “data consolidation and integration application for basic science in Qinghai Lake” as a part of the CAS scientific data resource consolidation and sharing project for the 12th Five-Year Plan period, applied by General Group for Advancing e-Science Applications, was approved. Another two major database projects, “data consolidation and integration application for basic science in the discipline of nuclear energy” and “data consolidation and integration application for basic science in the field of Chinese information processing”, jointly applied by General Group for Advancing e-Science Applications and Institute of Nuclear Energy Safety Technology, CAS, were approved.

16. On July 2, Document Library V3.0 of Scientific Research Online for mobile terminals (iOS, Android) was launched.

17. On July 5, the first meeting of the fourth council of Internet Society of China was held in Beijing. CNNIC director Huang Xiangyang, chief scientist Mao Wei and CNNIC advisor Qian Hualin were elected as vice chairmen.

18. On July 11, the national science and technology infrastructure platform “data sharing network of basic science – physical chemistry astronomy, space and biology” project, undertaken by CNIC, passed acceptance inspection.

19. From July 21 to 24, the 2013 Theory and High-performance Computing Chemistry International Conference, sponsored by CNIC Supercomputing Center, CAS and Dalian Institute of Chemical Physics, CAS, was held in Dalian, Liaoning Province.

20. In July, at the invitation of Prof. Klaus Schwab, founder and executive chairman of World Economic Forum, CNNIC executive director Li Xiaodong joined the Global Agenda Councils to participate in the work on The Future of the Internet. He was invited to attend the Summit on Global Agenda 2013.

21. On August 1, CSTNET finished upgrade and expansion of its network connected with China Telecom, upgrading two 2.5G lines to 10G and expanding the bandwidth from 3.5G to 5.6G.

22. On August 15, CSTNET opened a 10,000M line for the Lake Yanxi campus of University of Chinese Academy of Sciences.

23. From August 16 to 17, the 3rd CAS Supercomputing Application Meeting (SCA2013), hosted by CAS Informatization Leading Group Office, organized by CNIC & CAS Supercomputing Environment Center and co-organized by CAS Supercomputing Environment Hefei Sub-center & Hefei Institute of Physical Science, CAS, was successfully held in Anhui. CNIC publicized at the meeting the 2012 CAS supercomputing development index (CAS SCDI).

24. On August 20, the opening ceremony of 2013 China-ASEAN strategic cooperation projects on Internet network basic resources was held in Beijing.

25. From August 26 to 30, the 36th APNIC meeting, organized by CNNIC, was held in Xi’an. Three policy proposals were passed at the meeting, namely “reallocation of retrieved addresses”, “number shift in autonomous system (AS)” and “process revision of APNIC policy development”.

26. From August 30 to September 2, the 24th ICSN conference was held in Tokyo. At the meeting, CAS delegate Li Xiaodong, executive director of CNNIC, attended the meeting as a visitor.
26. On August 30, the startup ceremony of the project “national public service platform for Internet of Things identifier management”, part of the NDRC special projects on Internet of Things technology R&D and industrialization, was held in Beijing. Computer Network Information Center, CAS (China Internet Network Information Center, CNNIC) took the lead for project construction.

27. On September 25, in order to implement the national policy on independent innovation, under the guidance and with the support of the Ministry of Science and Technology, Supercomputing Innovation Alliance of China was set up in CNIC.

28. From October 21 to 22, the 3rd China e-Science Forum was held at China National Convention Center. The meeting was jointly sponsored by the Chinese Academy of Sciences, Ministry of Education, Chinese Academy of Social Sciences, Chinese Academy of Engineering and National Natural Science Foundation of China and organized by CAS Informatization Leading Group Office and Computer Network Information Center (CNIC), CAS. After the seminar, the 9th IEEE e-Science international seminar, jointly sponsored by CAS Informatization Leading Group Office and National Science & Technology Infrastructure Center and organized by CNIC, was held.


30. In November, two new services, dChat and VMT, were launched on Scientific Research Online (http://www.escience.cn), and Research Online Team Document Library was upgraded to a new version. The duckling user management system (version UMT7.1) realized open source at Github open-source website.

31. On November 25, the 1st CAS Youth Innovation Contest on Mobile Internet Application, jointly sponsored by Bureau of Facility Support and Budget, CAS, Youth League Committee and Youth Association and organized by CAS Network-based Science Education Alliance and CNIC, concluded with six Outstanding Application Awards, ten Outstanding Idea Awards and two Outstanding Organization Awards conferred.

32. In November, NDRC officially approved CNIC, CAS (CNNIC) to start construction of the national engineering lab in Internet domain name management technology.

33. On December 17, the CAS informatization soft project for the 12th Five-Year Plan period “application mechanism on scientific data sharing and study on benefit evaluation” undertaken by Scientific Data Center passed the acceptance appraisal organized by Informatization Office of Bureau of Facility Support and Budget, CAS.

34. In December, the Beijing engineering lab in big data application service technology, for which CNIC took the lead to apply, was approved.

35. In December, the 12302 SMS business system was officially launched.

36. In December, the “Hand-held CAS” was officially launched, providing scientific research and management personnel in CAS with science-related information and aid, aid for daily life and feature applications and providing the public with scientific information and services such as science popularization.
### Appendix 2: List of Postgraduate Supervisors

<table>
<thead>
<tr>
<th>Name</th>
<th>Professional title/position</th>
<th>Research direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yan Baoping</td>
<td>Research fellow, doctoral supervisor, chief engineer of CNIC</td>
<td>Database application, research application integration, semantic web, data mining, e-Science application, application of next-generation Internet</td>
</tr>
<tr>
<td>Li Jun</td>
<td>Research fellow, doctoral supervisor, assistant chief engineer of CNIC</td>
<td>Network architecture, management, security, wireless mobile technology</td>
</tr>
<tr>
<td>Mao Wei</td>
<td>Research fellow, doctoral supervisor, assistant chief engineer of CNIC</td>
<td>Fundamental network software, network information security, Internet data analysis</td>
</tr>
<tr>
<td>Chi Xuebin</td>
<td>Research fellow, doctoral supervisor, deputy director of CNIC</td>
<td>High-performance computation, visualization and grid technology</td>
</tr>
<tr>
<td>Lu Zhonghua</td>
<td>Research fellow, doctoral supervisor, deputy director of CNIC Supercomputing Center</td>
<td>High-performance computation, visualization and grid technology</td>
</tr>
<tr>
<td>Wang Shaowen</td>
<td>Research fellow, doctoral supervisor, chief consultant for foreign affairs CNIC</td>
<td>Parallel computation, distributed system, high-performance and collaboration-type geographic information system and space analysis, environment and application of geospace problem solving system based on informatization infrastructure</td>
</tr>
<tr>
<td>Ji Junchuan</td>
<td>Senior engineer, postgraduate student teacher, director of ARP Center</td>
<td>Information release and management technology, database application technology, data mining</td>
</tr>
<tr>
<td>Nan Kai</td>
<td>Research fellow, doctoral supervisor, deputy director of CNIC</td>
<td>Network collaboration environment, collaborative computation, distributed system</td>
</tr>
<tr>
<td>Li Jianhui</td>
<td>Senior engineer, doctoral supervisor, director of Scientific Data Center, assistant to director of CNIC</td>
<td>Data search and semantic integration, large-scale database, cloud storage</td>
</tr>
<tr>
<td>Ma Juncai</td>
<td>Senior engineer, part-time postgraduate student teacher, director of Network Information Center of the Institute of Microbiology of CAS</td>
<td>Massive processing of biological data, text mining and retrieval technique</td>
</tr>
<tr>
<td>Li Xin</td>
<td>Associate research fellow, postgraduate student teacher</td>
<td>Information release and management technology, database application technology, data mining</td>
</tr>
<tr>
<td>Li Xiaodong</td>
<td>Research fellow, doctoral supervisor, CNNIC executive director, assistant to director of CNIC</td>
<td>Internet fundamental resources, network information security, Internet data analysis, Internet governance</td>
</tr>
<tr>
<td>Ge Jingguo</td>
<td>Associate research fellow, postgraduate student teacher, deputy director of CSTNET Network Center</td>
<td>Network architecture, management, security, wireless mobile technology</td>
</tr>
<tr>
<td>Wu Kaichao</td>
<td>Senior engineer, postgraduate student teacher, deputy director of Overall Operation and Maintenance Support Center</td>
<td>Data search and semantic integration, large-scale database, cloud storage</td>
</tr>
<tr>
<td>Zhao Yonghua</td>
<td>Research fellow, postgraduate student teacher</td>
<td>High-performance computation, visualization and grid technology</td>
</tr>
<tr>
<td>Xi Zili</td>
<td>Senior engineer, part-time postgraduate student teacher, director of Shanghai Supercomputing Center</td>
<td>Software engineering, grid computing, system architecture</td>
</tr>
<tr>
<td>Luo Ze</td>
<td>Associate research fellow, postgraduate student teacher</td>
<td>Database application, research application integration, semantic web, data mining, e-Science application, application of next-generation Internet</td>
</tr>
<tr>
<td>Feng Yangde</td>
<td>Associate research fellow, postgraduate student teacher</td>
<td>High-performance computation, visualization and grid technology</td>
</tr>
<tr>
<td>Name</td>
<td>Professional title/position</td>
<td>Research direction</td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Luo Wanming</td>
<td>Associate research fellow, postgraduate student teacher</td>
<td>Database application, research application integration, semantic web, data mining, e-Science application, application of next-generation Internet</td>
</tr>
<tr>
<td>Zhou Yuanchun</td>
<td>Associate research fellow, postgraduate student teacher</td>
<td>Data search and semantic integration, large-scale database, cloud storage</td>
</tr>
<tr>
<td>Jin Zhong</td>
<td>Associate research fellow, postgraduate student teacher</td>
<td>High-performance computation, visualization and grid technology</td>
</tr>
<tr>
<td>Ma Yongzheng</td>
<td>Associate research fellow, postgraduate student teacher</td>
<td>Network collaboration environment, collaborative computation, distributed system</td>
</tr>
<tr>
<td>Wang Long</td>
<td>Research fellow, postgraduate student teacher</td>
<td>High-performance computation, visualization and grid technology</td>
</tr>
<tr>
<td>Wang Wei</td>
<td>Senior engineer, postgraduate student teacher</td>
<td>Fundamental network software, network information security, Internet data analysis</td>
</tr>
<tr>
<td>Dong Kejun</td>
<td>Associate research fellow, postgraduate student teacher</td>
<td>Network collaboration environment, collaborative computation, distributed system</td>
</tr>
<tr>
<td>Yu Jianjun</td>
<td>Associate research fellow, postgraduate student teacher</td>
<td>Network collaboration environment, collaborative computation, distributed system</td>
</tr>
<tr>
<td>Shan Guihua</td>
<td>Senior engineer, postgraduate student teacher</td>
<td>High-performance computation, visualization and grid technology</td>
</tr>
<tr>
<td>Yang Xiaoyu</td>
<td>Research fellow, doctoral supervisor</td>
<td>e-Science application and management information technology, big data processing technology and application</td>
</tr>
<tr>
<td>Jiang Jinrong</td>
<td>Associate research fellow, postgraduate student teacher</td>
<td>High-performance computation, visualization and grid technology</td>
</tr>
<tr>
<td>He Hongbo</td>
<td>Senior engineer, postgraduate student teacher</td>
<td>Database application, research application integration, semantic web, data mining, e-Science application, application of next-generation Internet</td>
</tr>
<tr>
<td>Li Huabiao</td>
<td>Senior engineer, postgraduate student teacher</td>
<td>Network collaboration environment, collaborative computation, distributed system</td>
</tr>
<tr>
<td>Tang Haina</td>
<td>Senior engineer, part-time postgraduate student teacher</td>
<td>Network architecture, management, security, wireless mobile technology</td>
</tr>
<tr>
<td>Kong Ning</td>
<td>Associate research fellow, postgraduate student teacher</td>
<td>Internet of Things identifier resolution, Internet of Things resource discovery</td>
</tr>
<tr>
<td>Qin Gang</td>
<td>Associate research fellow, postgraduate student teacher</td>
<td>e-Science application, next-generation Internet application</td>
</tr>
<tr>
<td>Li Chong</td>
<td>Associate research fellow, postgraduate student teacher</td>
<td>Network collaboration environment, distributed computing</td>
</tr>
<tr>
<td>Du Yihua</td>
<td>Senior engineer, postgraduate student teacher</td>
<td>Database application technology, information release and management technology</td>
</tr>
<tr>
<td>Jin Jian</td>
<td>Senior engineer, postgraduate student teacher</td>
<td>Network application and security, next-generation Internet technology</td>
</tr>
</tbody>
</table>
List of interdisciplinary postgraduate supervisors

<table>
<thead>
<tr>
<th>Name</th>
<th>Professional title/position</th>
<th>Research direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yue Tianxiang</td>
<td>Winner of Outstanding Youth Fund, research fellow, doctoral supervisor</td>
<td>Cartography and geographic information system</td>
</tr>
<tr>
<td>Li Xinliang</td>
<td>Research fellow, doctoral supervisor</td>
<td>Research on and application of parallel technology in computational fluid mechanics</td>
</tr>
<tr>
<td>Zhou Guangqing</td>
<td>Research fellow, doctoral supervisor</td>
<td>Climate mode, short-term climate prediction and oceanographic data assimilation</td>
</tr>
<tr>
<td>Xu Dongsheng</td>
<td>Research fellow, doctoral supervisor</td>
<td>Material science</td>
</tr>
<tr>
<td>Li Tianxian</td>
<td>Research fellow, doctoral supervisor</td>
<td>Virology/molecular biology</td>
</tr>
<tr>
<td>He Honglin</td>
<td>Associate research fellow, postgraduate student teacher</td>
<td>Eco-informatics/application of remote sensing and geographic information system</td>
</tr>
<tr>
<td>Yu Jun</td>
<td>Research fellow, doctoral supervisor</td>
<td>Bioinformatics</td>
</tr>
</tbody>
</table>

Appendix 3: List of Standards Approved to be Released in 2013

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Standard No.</th>
<th>Standard type</th>
<th>Attribute</th>
<th>Sequence</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Technical Requirement of Extensible Provisioning Protocol of Domain Name Registration agreement</td>
<td>YD/T 2643-2013</td>
<td>Industry standard</td>
<td>In charge</td>
<td>First</td>
</tr>
<tr>
<td>2</td>
<td>Domain Name System Security Extensions (DNSSec) agreement and realization requirement</td>
<td>YD/T 2586-2013</td>
<td>Industry standard</td>
<td>In charge</td>
<td>First</td>
</tr>
<tr>
<td>3</td>
<td>Requirement for transmission technology of domain name registration agreement</td>
<td>YD/T 2644-2013</td>
<td>Industry standard</td>
<td>In charge</td>
<td>First</td>
</tr>
<tr>
<td>4</td>
<td>Requirement for address technology for POP3 to support Chinese emails</td>
<td>YD/T 2645-2013</td>
<td>Industry standard</td>
<td>In charge</td>
<td>First</td>
</tr>
<tr>
<td>5</td>
<td>IMAP Support for UTF-8</td>
<td>RFC6855</td>
<td>International standard</td>
<td>Participation</td>
<td>Second</td>
</tr>
<tr>
<td>6</td>
<td>Post Office Protocol Version 3 (POP3) Support for UTF-8</td>
<td>RFC6856</td>
<td>International standard</td>
<td>Participation</td>
<td>Second</td>
</tr>
</tbody>
</table>
# Compilers of Annual Report

## Editorial Board

<table>
<thead>
<tr>
<th>Role</th>
<th>Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Director</td>
<td>Huang Xiangyang</td>
</tr>
<tr>
<td>Members</td>
<td>Chen Hao, Han Hua, Chi Xuebin, Nan Kai, Yan Baoping, Li Jianhui, Li Xiaodong, Hu Jumin, Ji Junchuan, Xiao Yun, Wang Wei, Tong Zhao, Wang Xin, and Wu Kaichao</td>
</tr>
</tbody>
</table>

## Drafting Team (In Chinese Alphabetic Order)

<table>
<thead>
<tr>
<th>Role</th>
<th>Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team leader</td>
<td>Wang Enhai</td>
</tr>
<tr>
<td>Vice team leader</td>
<td>Zhang Yong</td>
</tr>
<tr>
<td>Members</td>
<td>Cheng Qi, Gu Beibei, Kong Lihua, Li Wen, Li Chaojie, Li Jian, Li Shuren, Qiao Jianwei, Qin Gang, Sun Zhanyong, Tang Hong, Wang Fengxia, Wang Jingjie, Yang Deting, Yu Luqing, and Zhang Xin</td>
</tr>
</tbody>
</table>